JOURNAL OF PHARMACEUTICAL ANALYSIS

SHORT-COGNITIVE BEHAVIOUR TREATMENT: A PREVENTIVE MEASURE FOR ADOLESCENTS' EMOTIONAL DISTRESS

Sylvester Ezechinyere Eze[1], Sussan Olufunmilola Adeusi[1], Gboyega Emmanuel Abikoye[2]

[1]Department of Psychology, College of Leadership and Development Studies, Covenant University, Ota, Ogun State, Nigeria

[2]Department of Psychology, Faculty Social Sciences, University of Uyo, Akwa-Ibom State, Nigeria

Abstract

Over the last two decades, there has been a significant increase in the number of adolescents suffering from mental health conditions, predominantly depression, anxiety, and stress, in low-income rural communities. These communities face challenges such as a lack of mental health professionals, low treatment rates, and a paucity of studies on therapeutic interventions. This study investigated the efficacy of short-cognitive behaviour treatment (S-CBT) aimed at reducing emotional distress symptoms using a pre-test, post-test control group experimental design. Forty-eight participants with a mean age of 13.38 years (SD =1.8) were randomly selected from four mixed high schools in Oyo town and assigned into two equal groups of 24 treatment and no-treatment participants by ballot. Emotional distress symptoms were measured at pre-test, post-test, and post-intervention using the 21-item version of the Depression, Anxiety, and Stress Scale (DASS21). Data were analysed using a paired sample t-test. Results showed that a 50-minute session per week for six sessions, exposing treatment group participants to S-CBT with psychoeducation, cognitive restructuring, breathing relaxation, and affirmation of self-positive skills as components, was significantly effective at reducing elevated emotional distress symptoms ($t(20) = 6.93$, $p < 0.001$). The mean difference showed that the treatment effect remained after four weeks ($M = 30.35$) when compared to pre-test ($M = 56.85$) and post-test ($M = 26.24$) scores of participants in the treatment group ($t(13) = 6.90$, $p < 0.01$). Additionally, there was no significant difference in elevated symptoms at pre-test ($M = 49.30$) and post-test ($M = 48.35$) measures of emotional distress among control group participants ($t(19) = 0.14$, $p > 0.05$). The results indicated that administering S-CBT sessions in schools can ameliorate the incidence of emotional distress and associated negative mental health consequences. Further studies are encouraged to explore the viability of S-CBT considering the highlighted treatment components.

Key words: brief-cognitive behaviour therapy, emotional distress, adolescents, rural health

INTRODUCTION

Over the last two decades, there has been a significant increase in the number of adolescents suffering from mental health conditions (Daly, 2022; Polanczyk et al., 2015; Shorey et al., 2022). With over 1.3 billion adolescents globally (UNICEF, 2021), it is estimated that one in every seven adolescents suffers from mental health disorders (UNICEF, 2021; WHO, 2022). Mental disorders among adolescents have remained a major public health issue needing urgent attention worldwide (UNICEF, 2021; Wang et al., 2023; WHO, 2020). According to the World Health Organization (WHO), most adolescents who experience mental disorders remain largely unrecognized, ignored, and untreated, particularly in low-income economies (UNICEF, 2021; WHO, 2022).

UNICEF (2021) report on adolescents' mental health reveals that anxiety and depression remain the most common mental health issues affecting adolescents worldwide. Depressive and anxiety symptoms coexist as major mental health problems among adolescents, which are typical characteristics of emotional distress associated with suicide, social impairment, poor grades, dropping out of school, and health loss, particularly in low-income economies (Evans, 2021; Gebremedhin et al., 2020; IHME, 2021; Kalin, 2020; Shorey et al., 2022; UNICEF, 2021). With more than half of the global adolescent population residing in low-income countries, which are characterized by a paucity of data on adolescent mental health conditions (UNICEF, 2021), a scarcity of mental health professionals, and low treatment rates (Wang et al., 2023), there is an urgent need for researchers to undertake studies of therapeutic interventions and examine the efficacy of treatments like cognitive behavioral therapy (CBT). This is especially important in countries like Nigeria with high teenage populations (Doris, 2023; NBS, 2020). Additionally, the emigration of the few available mental health professionals to developed countries in search of better opportunities (Onah et al., 2022) underscores the need for studies on treatment interventions such as brief cognitive behavioral therapy. This approach can be easily administered without rigorous requirements, lengthy sessions, or high costs, helping to mitigate the high incidence of mental health conditions among adolescents in low-income countries, particularly in rural communities.

Studies reviewing therapeutic interventions have shown that cognitive behaviour therapy (CBT) remains the most efficacious at reducing mental health disorders such as psychological distress, stress, anxiety, and depression among adolescents globally (Avsar & Sevim, 2022; Curtiss et al., 2021; Méndez et al., 2021; Oud et al., 2019). Noticeably, CBT's effectiveness is well established when compared to other treatment interventions, such as medication, in both individualized and group treatment settings (Cuijpers et al., 2021; Hayes et al., 2010; Méndez et al., 2021; Polanczyk et al., 2015). Similarly, studies have shown that CBT, as a short-session treatment, remains as effective as long-session treatments in reducing mental health conditions, including depression, anxiety, and stress disorders, in both adult and adolescent populations using group or

individualized treatment approaches worldwide (Curtiss et al., 2021; Oud et al., 2019; Purgato et al., 2018; Rasmussen et al., 2021; Watkins, 2017; Zunuraina & Menaldi, 2020).

Furthermore, face-to-face or online administered cognitive behaviour therapy in group or individual settings has been shown to effectively mitigate mood disorder symptoms, including depression, anxiety, and stress, in adults and teenagers (Avsar & Sevim, 2022; Changklang & Ranteh, 2023; Chidi et al., 2020; Egenti et al., 2021; Nuraeni et al., 2023; Zunuraina & Menaldi, 2020). For instance, Changklang and Ranteh (2023) observed that group-administered cognitive behaviour therapy, conducted over eight sessions in two months, was notably effective at decreasing symptoms of depression, anxiety, and stress among participants aged 18–21 years. Likewise, Atik et al. (2023) showed that group therapy using cognitive behaviour interventions over a six-week period significantly improved participants' symptoms of anxiety and depression. Additionally, Piro and Taha (2023) revealed that short cognitive behaviour therapy notably lowered the severity of panic disorder symptoms at post-treatment and one month post-intervention.

Cognitive behaviour treatment interventions primarily focus on cognitions and behaviours to improve distress symptoms (Lorenzo-Luaces et al., 2021). The cognitive aspect of CBT interventions targets individuals' cognitive biases (thinking patterns) that arise following events, using psychoeducation and cognitive restructuring to address symptoms. The behaviour aspect involves engaging in activities to target biases in thinking and mitigate distress symptoms (Beck & Fleming, 2021; Cully et al., 2020). Typically, these combined treatment components are delivered by trained experts or professionals in either brief or lengthy sessions to relieve elevated distressing symptoms or address presented complaints.

A standard session may last 12 to 20 sessions targeting symptom relief, while a brief session may be within 4 to 8 sessions. Notably, researchers have shown that brief cognitive behaviour therapy is as effective as standard lengthy sessions. The latter often involve intensive talks, increased costs, and therapeutic homework that can result in clients' poor treatment access and completion (Australian Psychological Society (APS), 2018; Beck & Fleming, 2021; Brooks et al., 2021; Lorenzo-Luaces et al., 2021; Oltean et al., 2019; Wu et al., 2023).

Regrettably, while there is a plethora of studies on the efficacy of cognitive-behaviour therapies predominantly carried out in developed countries with lower incidences of adolescent psychological distress and greater treatment accessibility (Beaudry et al., 2019; Cavioni et al., 2020; Clayborne et al., 2019; Ghandour et al., 2019; Oud et al., 2019; Wang et al., 2023), there is a paucity of such data in low-income countries in Africa, including Nigeria. These countries face high incidences of adolescent mental conditions, poor treatment accessibility and availability, and a higher adolescent population, with a prevalence and preponderance of mental health conditions

typically in rural communities (Alinnor et al., 2023; Eze et al., 2023; Jibunoh & Ani, 2022; NBS, 2020; Oderinde et al., 2018; WHO, 2022).

In the global South, there is a continuous notable rise in the number of adolescents who persist in suffering from mental health conditions typical of emotional distress, such as stress, anxiety, and depression, despite the well-established effectiveness of treatments such as cognitive-behaviour therapies (Alinnor & Okeafor, 2023; Daly, 2022; Girma et al., 2021; Nabunya et al., 2020; Saiful et al., 2021; Shorey et al., 2022).

Furthermore, researchers have emphasized the urgency for targeted treatment intervention programmes in schools, given the high incidence of emotional distress among adolescents. Approximately 1 in every 3 adolescents in the global South, such as Nigeria, compared to 1 in 5 in their global North counterparts, suffers from elevated emotional distress symptoms (Akanni & Otakpor, 2016; Alinnor & Okeafor, 2023; Anyanwu, 2021; Daly, 2022; Gebremedhin et al., 2020; Girma et al., 2021; Hasani, 2022; Mridha et al., 2021; Nabunya et al., 2020; Oderinde et al., 2018; Pengpid & Peltzer, 2020; Saiful et al., 2021; Shorey et al., 2022). The magnitude and impact of untreated or unrecognized mental distress among adolescents have raised concerns for mental well-being in terms of awareness, availability of evidence-based interventions, and accessibility, especially in low-income countries and rural areas (WHO, 2022). For instance, adolescents' experiences of mood disorders have been linked to behaviours such as substance use, self-harm, suicide, academic underachievement, and early pregnancy among secondary school students (Anyanwu, 2021; Barker et al., 2019; Clayborne et al., 2019; Lee et al., 2017; UNICEF, 2021).

Consequently, the administration of brief cognitive treatment sessions would allow scarce professionals (Obubu et al., 2023; Onah et al., 2022) more time for intervention in specialized and non-specialized settings such as schools, given its established efficacy.

Therefore, this research, taking into account the negative consequences associated with untreated psychological distress and its prevalence among adolescents, and the urgent need for evidence-based treatment interventions amidst a shortage of mental health professionals, investigated the effectiveness of a short cognitive-behavioural treatment session. This session included deep breathing relaxation and self-positive affirmations among secondary school adolescents with elevated symptoms of psychological distress in a rural school setting.

Two hypotheses were stated for the study. First, adolescents assigned to the treatment group who were exposed to the short cognitive-behavioural treatment would report significantly lower psychological distress symptoms than those in the control group who did not receive treatment. Second, adolescents in the treatment group would report significantly lower psychological distress at follow-up compared to their pre-test and post-test scores.

Materials and Methods

Study Design

An experimental design was utilized with participants randomly assigned to an experimental group and a control group to measure psychological distress at pre-test, post-test, and follow-up intervals, determining the effectiveness of a short cognitive-behavioral treatment intervention. A total of 240 secondary school students, selected randomly from four coeducational schools (60 students per school) within the age bracket of 10 to 18 years, were assessed for pre-test psychological distress symptoms using the Depression, Anxiety, and Stress Scale (DASS). From the administered study questionnaire, 48 students who obtained a mean score of 30.6 and above were apportioned to the experimental and control groups by ballot. Each group included six participants from each of the four chosen schools.

Four research assistants were chosen to pick a wrapped paper each from a brown paper envelope containing coded names assigned to the eleven secondary schools purposively selected from Kosobo in the Oyo-East area council of Oyo State. Each school consisted of six class arms: Junior Secondary School (JSS) classes 1 to 3 and Senior Secondary School (SSS) classes 1 to 3. The study questionnaires, which were coded, were administered in the selected schools. The name codes were then written on small pieces of paper, wrapped, and placed in a paper bag after the participants had responded. Once again, by ballot, the four research assistants drew six coded wrapped pieces of paper from the bag, one after the other. The selected coded papers were placed in carton boxes marked A and B until each box had 24 selected papers representing participants. Box A was assigned to the experimental group to receive the treatment intervention, while Box B was assigned to the control group to receive no treatment. At the end of the treatment intervention period, participants in Group B were administered a one-off session of psychoeducation.

Setting

The study was conducted in Kosobo, within the Oyo town, southwest Nigeria. Kosobo is a primarily rural agrarian community and serves as the administrative headquarters of the Oyo-area council, which includes 13 other rural communities. The halls of four randomly chosen schools were utilized for administering the study questionnaire to collect pre-test data during the recess period. Additionally, the hall of St. Francis College in Kosobo, Oyo was selected for its availability, transport accessibility, and conducive environment, including power supply, seats, ceiling fans, security, and the presence of a school clinic, making it suitable for the treatment intervention.

The informed choice of the study's setting, a predominantly agrarian rural area (Ajuwon & Sandhu, 2018), was driven by previous research findings on the prevalence of depression, anxiety, and stress among adolescents. These findings highlighted the associated negative outcomes and

the need for evidence-based treatment interventions, particularly among rural adolescents who have poor treatment access and availability in low-income countries such as Nigeria (Adeleke, 2023; Alinnor & Okeafor, 2023; Amoran et al., 2007; Evans, 2021; Gebremedhin et al., 2020; Nabunya et al., 2020; Oderinde et al., 2018; Okeke et al., 2023; Opakunle et al., 2022; UNICEF, 2021; Wang et al., 2023).

Participants

The research involved a total of 48 participants with an average age of 13.38 years (SD=1.8), randomly assigned to the experimental and control groups, evenly distributed by schools, with 24 participants in each group within the age range of 11 to 16 years. The 48 participants were selected from 240 participants who were administered the study questionnaire for pre-test scores on psychological distress symptoms and had a mean score of 31 and above for inclusion.

Sixty participants responded to the questionnaire from each of the four selected schools and were currently registered in one of the class arms: JSS1, JSS2, JSS3, SSS1, SSS2, or SSS3. For the experiment, a list was created with each questionnaire assigned a code. Using the ballot technique, four study assistants blindly drew six coded wrapped papers each consecutively and placed them into two envelopes inscribed A and B until 48 participants were selected.

Group A and Group B each had 24 participants. Group A consisted of 12 male and 12 female participants with a mean baseline score of 50 (SD=14.54), while Group B, with a baseline mean score of 59.58 (SD=17.83), had 11 male and 13 female participants. See Table 1 for additional demographic information on group participants.

Sample Size Determination

Taking into account a 0.90 effect size (d), 0.80 statistical power level, 0.50 probability level, and 0.05 confidence level (two-tailed), statistical power analysis for behavioural sciences as suggested by Cohen (Uakarn, 2021) was conducted. Entered into the a-priori sample size calculator (Soper, 2024), a minimum group sample size of 21 and a maximum of 42 were determined. The researcher added 3 participants to the minimum group sample size to account for a sizable class control, possible attrition, and equal number of inclusion of 6 participants from each of the four selected schools. Thus, each group had 24 participants.

Measurements

An abridged version of the Depression, Anxiety, and Stress Scale (DASS) with 21 items, developed by Lovibond and Lovibond, was used as a measure of emotional distress symptoms (Lovibond & Lovibond, 2018; Medvedev, 2023). The scale has three subscales of seven items each for depression, anxiety, and stress, scored on a Likert scale from 0 to 3 for each of the 21

items. A higher score on the scale indicates the presence of severe symptoms of psychological distress, while a lower score indicates mild to no distress symptoms, using the provided severity index for interpretation. A mean score of 30 and above, which falls within the moderate to severe index level of psychological distress, was used for the inclusion of participants into the study groups.

The DASS21 is a widely adopted scale among adolescent populations globally, with strong established reliability, showing Cronbach's alpha values of 0.81, 0.89, and 0.78 for the depressive, anxiety, and stress subscales, respectively, among Nigerian samples (Coker et al., 2018). In this study, Cronbach's alpha values were 0.74 for the DASS21 overall, with 0.63 for depression, 0.34 for anxiety, and 0.52 for stress. Notably, the DASS21 is a self-report measure of non-categorized distress (Lovibond & Lovibond, 2018), designed to assess distress symptoms, with an average completion time of 10 to 15 minutes for pre-test, post-test, and follow-up measures among the study participants.

Procedure for Collecting Data

The study was carried out with the registered approved number CHREC/208/2023 from the Covenant University Health Research Ethics Committee (CHREC). Letters were written to the school heads to request informed permission and parental assent for the students' participation in the study. To ensure voluntariness in participants' participation and the granting of assents, verbal explanations were further made to the school management, parents, and students separately. The participants were informed that they had the right to withdraw from the study at any point by notifying the researcher verbally. After receiving informed permission and assents via the school heads and parents through the school principal, questionnaires were administered during a long recess to obtain pre-test scores. A psychological distress mean score of 30 and above was utilized for the inclusion of students into the experimental phase of the study, which comprised two groups: the control group (B) and the treatment intervention group (A), which received short cognitive-behaviour treatment intervention.

The treatment group participants were exposed to 50-minute sessions of cognitive behavioural treatment over a six-week period. Participants attended these sessions after school on Fridays between 1 PM and 2 PM, where they were exposed to projected slides of treatment components. The treatment components included the following in weekly sessions: session 1, creating a therapeutic relationship (week 1); session 2, psychoeducation (week 2); session 3, first cognitive restructuring (week 3); session 4, second cognitive restructuring (week 4); session 5, deep breathing relaxation (week 5); session 6, self-positive affirmation (week 6). The study questionnaire was administered again to obtain post-treatment intervention scores on psychological distress. Additionally, after a four-week follow-up period, psychological distress was measured using the study questionnaire among the group participants. Responding to the study

questionnaire and exposure to the treatment intervention, as well as a one-off psycho-educational session with control group participants, were conducted in the chosen school hall venue.

Procedure for Short-Cognitive Treatment Intervention

Behavioural entry involved the researcher asking participants about their day, including their experiences in class, school, and their journey to the venue, as well as checking in on the provided logging-in register. This lasted for ten minutes. Additionally, two group participants, one male and one female, were asked to share their behavioural entry experiences, followed by a round of applause from the group members. For another ten minutes, participants were asked to mention at least one point of interest or concern from the previous session's activity. Every participant who shared feedback from the previous session received a round of applause. The introduction of the day's treatment topic and teaching of the session's content via slide projection lasted for twenty minutes. Finally, the session concluded with a wrap-up that included a question-and-answer segment, communication of assignments, expressions of appreciation, and sharing of refreshments, marking the end of the session for about ten minutes. The slides projected included images, diagrams, question prompts, and answers to facilitate mastery of the session's content and activities aimed at reducing emotional distress symptoms. A summary of each session's weekly content and purpose is presented in Table 1 below.

Table 1

Summary of Weekly Session's Content and Purpose

Sessions by week	Content	Purpose
1. Creating therapeutic relationship	Participants and researcher's self-introductions, communication of rules, expectations, conducts including task and home works completions. Activity: engaging participants with the day's topics by introducing cognitive-behaviour treatment. Explanation of psychological distress, symptoms, examples and predispositions. Asking questions: researcher asked questions on participants' prior understanding to the concept cognitive-behaviour, psychological distress and examples of symptoms with information that there are no right or wrong response. Answering of question: participants' shares their previous understanding on the concepts mentioned	To inspire guided active voluntary relatedness and participation. To elicits previous understanding cognitive behaviour therapy and elicit awareness of thoughts, feeling and likely taking

	above. At least four participants were randomly called to share their knowledge. Task: Answering of questioned asked by researcher and participants' questions. Home work: Remember any event, write down how you saw the event, how you felt about it and reacted. Sharing of refreshments by two participants volunteers.	actions toward event occurrence.
2. Psycho-education	The association recognition in occurrence of events, how it was viewed and behaviour response. Activity: Review of participants' assigned home work. Creating events list from occurred events remembered. Introducing the session's topic. Explanation of psychological distress, symptoms, and examples as precipitated by how we see or interpreted the events that occurred. Asking questions: participants were asked to ascribe a name or description of how they felt on their experienced events listed, view of such events and how they felt after given their interpretation. Answering of question: participants' shared ascribed names and description such as embarrassed, very sad, weepy, and annoyed, my chest beating fast, legs shaky. Participants stepped forward to share and round of applause given to them by group members. Task: Think of events, assign the name negative or positive. Also, assign your thinking of the event positive or negative, and then your feeling as positive or negative Home work: Within the next one week, observed events at least one that you felt sad, to answer the	To enable knowledge link between what has happened, one's view of it bringing about feelings of distress

		question on how did I interpret or see the event (negative or positive), what you felt given the how you saw it. Sharing of refreshments by two participants volunteers.	
3.	Cognitive Restructurin1	Exploring alternative view of events occurrence rather than one negative patterned view. Activity: review of previous assigned homework, other events experienced and arriving to the venue. Introduction the session's topic. Further explanation of psychological distress, symptoms, and examples its precipitation and perpetuation by how we see or interpreted the events that occurred negatively or positively. Asking questions: four participants who volunteered to come out were asked to tell their observed events, thinking of the events and feelings of the events. What were their assigned descriptions name (negative or positive). Also, other group members were encouraged to assign description to the thinking of the event positive or negative, the event and then the feelings as positive or negative given the four volunteers shared experienced. Considering likely alternative ways of viewing the events explored Answering of question: participants' shared ascribed names and descriptions as positive and negative. Assigned descriptions as positive and negative differs among participants such as feeling angry or weepy as positive and/or negative among group members. Task: Think of your event, the assigned name negative or positive and consider thinking the event	To enable clarity in the knowledge link between one's thinking of events resulting into symptoms experienced, and to bring about change in negative patterned thinking

		positively and then how you feel as positive or less negative. Home work: in this coming week, observed events at least one that you would ordinarily see as bad, that may make you feel sad, positively by answering the question can I interpret it positively rather than negatively. Refreshment was shared by two group members, a male and a female.	
4.	Cognitive Restructuring2	Acting of events, interpretation of the acted events, and description of observed feelings and bodily response (behaviour) noticed. Asking questions: following the projected slides for the day's session, participants were asked to remember or see previously mentioned and shared events projected in slide as bad. Then step forward in pairs sharing alternative ways to see or view what has happened and tell us if they feel better or worse. Answering of questions: participant(s) mentioned it that it was their interpretation of the event that made them feel sad. As an example, a participant felt so sad for missing a mathematics teacher's question in class. Label the event as a very bad event, his heart beating very fast and thought he was never going to answer math questions correctly again in class. Task: Think of any previous event, and suggest other ways you would have interpreted it that are not negative. Home work: observe events that would be happening to you within the week, think it, see it or view it positively to feel good instead of negatively to feel bad, sad. Snacks were shared by a male and female appointed group member.	To help participants attain a change in negative patterned seeing or view of events by considering and suggesting alternatives thinking to result in less distress symptoms

5.	Deep breathing relaxation	There is a connection between hour our body respond to how we think and feel when events happen. Activity: review of previous assigned homework. Introduction of the session's topic. Explanation and demonstration of breathing relaxation to help control positively bodily response (heart beating very fast) when angry or to boost feeling of not breathing very well when sad in occurrence and thinking of events negatively. Asking questions: two participants were first called to demonstrate how they would breathe in any of the previously mentioned events. Then members of the group were exposed to step by step inhaling of air (oxygen) and exhaling of air (carbon dioxide) placing their left hand on their abdomen, having their mouth closed without raising up or bringing down their heads in course of the breathing exercise. Answering of questions: participant(s) asked whether they could perform the routine while standing or seating only. Members of the group were put through deep relaxation skill while standing and seating. They mentioned it that it was good exercise as they felt relief, light and good in interpretation of the event that made them feel sad. Task: Think of any previous event, and breath slowly controlling and being in charge of your breathing pattern rather than the event. Describe how you feel negative or positive. Home work: observe at least three events that would be happening to you within the week, try to control your breathing while thinking it, seeing it	To help participants control positively bodily response (heart beating very fast) when angry or to boost feeling of not breathing very well when sad in occurrence and thinking of events negatively.

	or viewing it positively to feel good instead of negatively to feel bad, sad. Refreshments were shared by a male and female appointed group member.	
6. Self-affirmation: Positively.	Focusing on positive self-picture of oneself in occurrence of event instead on negative self-picture. Activity: The participant were taught that there is always a silence unheard voice in one's mind when events happen, that most often they tend to be more negative focusing of one's bad self-images; failures, mistakes, weakness rather than strengths. Participants were told to think of any positive they did, exhibited, portrayed when the events happened they tend not to be aware of and speak it to them self. Review of previous home works. Asking questions: Recall previous events and speak to yourself those positive things they have or portrayed in the course of the events. Four volunteers were asked to demonstrate their speaking of self-positives. Answering of questions: all group members shared at least two positives of self-pictures exhibited. Feedbacks: some participants were told labelled as "psycho" which being negatively stigmatised as mental sick. Also, a participant was told by her dad as behaving more mature at home among the siblings given the way she control her emotion. Refreshment was shared and vote of thanks given by a male and female following the appreciative and reassuring remarks by the researchers.	To enable participants identify, aware and speak to themselves these unaware positive self-pictures in experiencing of occurred events.

Results

Utilizing the Statistical Package for the Social Sciences (SPSS) version 23 for data coding, statistical analyses, including inferential and descriptive statistics, were conducted, with the results presented in the following tables. First, participants' descriptive statistics on the frequency and percentage representation of class arms included in the study, as well as their gender proportions in each group, are provided. Second, the results of the hypotheses tested for the study are presented.

Table 2

Descriptive Statistics of Participants by Groups

Variable		Frequency		Per cent (%)	
		Group A	Group B	Group A	Group B
Gender:	Female	12	13	50	54.2
	Male	12	11	50	45.8
Class:	JSS1	5	6	20.8	25
	JSS2	4	2	16.7	8.3
	JSS3	4	7	16.7	29.2
	SSS1	4	4	16.7	16.7
	SSS2	4	3	16.7	12.5
	SSS3	3	2	12.5	8.3
Age		Mean		Standard Deviation	
		13.38		1.8	

Equal gender inclusion of 12 male (50%) and 12 female (50%) participants was observed in Group A, who were exposed to the short cognitive-behaviour treatment intervention, as shown in Table 2. The highest number of Group A participants came from the JSS1 class, with 5 students (20.8%), followed equally by 4 students (16.7%) each from JSS2, JSS3, SSS1, and SSS2. The SSS3 class had the lowest number of students, with 3 (12.5%). Unlike Group A, which had an equal number of male and female participants, Group B had 13 female (54.2%) and 11 male (45.8%) participants. The highest number of Group B participants came from JSS3, with 7 students (29.2%), followed by JSS1 with 6 students (25%), SSS1 with 4 students (16.7%), SSS2 with 3 students (12.5%), and both JSS2 and SSS3 with 2 students (8.3%) each.

Table 3

Pairwise Sample T-test of Short-Cognitive Behaviour Treatment Effectiveness on Psychological Distress between Treatment and Control Groups

Variable	Treatment	Period	N	M	SD	Df	T	p
Emotional distress	Short-CBT (Group A)	Pre-test	21	51.23	15.09			
		Post-test	21	26.24	15.15	20	6.93	0.00
	No treatment (Group B)	Pre-test	20	49.30	17.09	19	0.14	0.89
		Post-test	20	48.35	30.61			

Given the outcomes of the pairwise sample t-test outlined in Table 3, the statistical difference in observed mean scores of emotional distress measured at pre-test (M = 51.23) and post-test (M = 26.24) shows that exposure of Group A participants to the short cognitive-behaviour treatment intervention was significantly effective in reducing emotional distress symptoms among the students ($t(20) = 6.93$, $p < 0.001$). Additionally, the lack of significant difference in mean scores observed in the pre-test (M = 49.30) and post-test (M = 48.35) measures of emotional distress symptoms among control group (B) members, who were not exposed to any treatment intervention ($t(19) = 0.14$, $p > 0.05$), further supports the effectiveness of the administered treatment condition received by treatment group (A) participants.

Table 4

Observed Mean Difference in Emotional Distress Levels in the Treatment Group at Pre-test, Post-test, and 4-week Follow-up Intervals

Variable	Treatment	Period	N	M	SD	df	T	p
Emotional distress	Short-Cognitive Behaviour	Pre-test	14	56.85	14.81			
		Post-test	14	28.50	13.03			
		Follow-up	14	30.35	15.93	13	6.90	0.00

Given the observed mean difference outlined in Table 4, the short cognitive-behaviour treatment intervention remained significantly effective at mitigating distress symptoms among the experimental group participants. The pre-test mean was 56.85, and the 4-week follow-up interval mean was 30.35. Exposing a group of secondary school students (participants) to six sessions of 50 minutes per week of cognitive-behaviour treatment, which included psychoeducation, cognitive

restructuring, breathing relaxation, and affirmation of self-positives, was significantly effective at mitigating emotional distress symptoms after a 4-week follow-up period ($t(13) = 6.90$, $p < 0.01$).

Discussion

This study examined the effectiveness of short-cognitive behaviour treatment, inclusive of breathing relaxation and affirmation of self-positives, on emotional distress symptoms among 48 randomly selected students assigned to intervention and control groups in a school setting within a rural agrarian community. The experimental group participants were exposed to six sessions of short-cognitive behaviour treatment, which included psychoeducation, cognitive restructuring, breathing relaxation, and affirmation of self-positive skills. The treatment exposure for the grouped participants with elevated emotional distress symptoms of depression, anxiety, and stress showed the efficacy of the intervention at post-treatment and four-week follow-up, as shown in Tables 3 and 4.

The results presented in Table 3, considering the study's first hypothesis—that adolescents assigned to the treatment group and exposed to the short-cognitive behaviour treatment would report notably lower psychological distress symptoms than those in the control group—revealed that the experimental group participants had significantly lowered emotional distress symptoms at post-intervention, while the emotional distress symptoms of the control group participants remained high.

Furthermore, the results presented in Table 4, addressing the study's second hypothesis—that adolescents in the treatment group would report significantly lower psychological distress at follow-up compared to pre-test and post-test scores—indicated the efficacy of the treatment intervention. Initially, the pre-test psychological distress measured was high, then it reduced at post-treatment and remained low after four weeks post-treatment among the experimental group participants (see Table 4).

The results of this study appear to be supported by previous research (Atik et al., 2023; Changklang & Ranteh, 2023; Lorenzo-Luaces et al., 2021; Nuraeni et al., 2023; Piro & Taha, 2023). Atik et al. (2023) indicated that brief-cognitive behaviour therapy brought about significant improvements in symptoms of depression and anxiety in participants assigned to two intervention groups. Additionally, the participants in the intervention groups showed improvements in their measured pre-test depression and anxiety scores compared to their post-treatment intervention scores after six weekly sessions, with large treatment effect sizes. Similarly, Changklang and Ranteh (2023) found that group-administered brief-cognitive behaviour therapy, consisting of eight sessions over eight weeks, was notably effective at decreasing symptoms of depression, anxiety, and stress among participants aged 18 to 21 years. Furthermore, the maintained reduction in distress symptoms, such as stress, anxiety, and depressive symptoms, observed in this study among treatment group participants after four weeks, appears to be supported by the findings of Piro and

Taha (2023), who revealed that short-cognitive behaviour therapy notably lowered the severity of panic disorder symptoms at post-treatment and one month post-intervention in a group of participants.

Additionally, the treatment outcomes of this study are supported by previous studies in a systematic review on the efficacy of cognitive behaviour therapy conducted by Lorenzo-Luaces et al. (2021). Lorenzo-Luaces et al. (2021) observed that patients with clinical depressive symptoms exposed to cognitive behaviour therapy attained symptom remission among all control group members. Similarly, the 4-week post-intervention treatment effect maintained among the experimental group participants in this study has received credence from a meta-analysis conducted by Nuraeni et al. (2023). Nuraeni et al. (2023) observed that cognitive behaviour treatments significantly reduced depressive symptoms and that treatment effects significantly remained, lowering distress symptoms at short-term follow-ups.

Conclusion

Therefore, exposing psychologically distressed adolescents in rural communities to short-cognitive behaviour treatment sessions in school settings, with a 4-week follow-up period, remains a viable psychological intervention for reducing the incidence of depression, anxiety, and stress in low-income countries. More importantly, exposing adolescents with psychological distress symptoms to cognitive components such as psychoeducation and cognitive restructuring, combined with behavioural components such as breathing relaxation and affirmation of self-positive skills in a 50-minute per week brief-cognitive behaviour therapy sessions, appears to significantly reduce elevated distress symptoms with sustained treatment effects over time. It is suggested that the management of schools and policymakers should consider exposing their students to short-cognitive behaviour therapy sessions to ameliorate the negative impact of emotional distress, such as stress, anxiety, and depression, among adolescents in low-income countries.

REFERENCE

Alinnor, E. A., & Okeafor, C. U. (2023). Depression and Associated Factors among In-school Adolescents in Nigeria. *Asian Journal of Social Health and Behaviour*, *6*(1), 14–20. https://doi.org/10.4103/SHB.SHB

Australian Psychological Society (APS). (2018). Evidence-based Psychological Interventions in the Treatment of Mental Disorders. *Fourth Edition*, 1–175.

Avsar, V., & Sevim, S. A. (2022). The Effectiveness of Cognitive Behavioral Therapy Including Updating the Early Life Experiences and Images with the Empty Chair Technique on Social Anxiety. *International Journal of Assessment Tools in Education*, *9*(1), 181–202. https://doi.org/10.21449/ijate.1062613

Beck, J. S., & Fleming, S. (2021). A brief history of Aaron T. Beck, MD, and cognitive behavior therapy. *Clinical Psychology in Europe*, *3*(2), 1–7. https://doi.org/10.32872/CPE.6701

Brooks, S. K., Weston, D., Wessely, S., & Greenberg, N. (2021). Effectiveness and acceptability of brief psychoeducational interventions after potentially traumatic events: A systematic review. *European Journal of Psychotraumatology*, *12*(1). https://doi.org/10.1080/20008198.2021.1923110

Changklang, P., & Ranteh, O. (2023). The effects of cognitive behavioural therapy on depression, anxiety, stress, and self-esteem in public health students, Thailand. *Journal of Education and Health Promotion*, *12*(1), 1–8. https://doi.org/10.4103/jehp.jehp_1274_22

Chidi, M., Onyedibe, C., Nkechi, A. C., & Ifeagwazi, C. M. (2020). Effectiveness of Group Cognitive-Behavioral Therapy on Anxiety and Depression in Nigerian Breast Cancer Patients. In *International Journal of Psychology & Psychological Therapy* (Vol. 20). https://www.ijpsy.com/volumen20/num2/547/

Cuijpers, P., Karyotaki, E., Ciharova, M., Miguel, C., Noma, H., Stikkelbroek, Y., Weisz, J. R., & Furukawa, T. A. (2021). The effects of psychological treatments of depression in children and adolescents on response, reliable change, and deterioration: a systematic review and meta-analysis. *European Child and Adolescent Psychiatry*. https://doi.org/10.1007/s00787-021-01884-6

Cully, J. A., Dawson, D. B., Hamer, J., & Tharp, A. T. (2020). A Provider's Guide to Brief Cognitive Behaviour Therapy. *Department of Veterans Affairs South Central MIRECC, Houston, TX.* https://www.mirecc.va.gov/visn16/docs/%0A therapists_guide_to_brief_cbtmanual.pdf

Curtiss, J. E., Levine, D. S., Ander, I., & Baker, A. W. (2021). Cognitive-Behavioral Treatments for Anxiety and Stress-Related Disorders. *Focus*, *19*(2), 184–189. https://doi.org/10.1176/appi.focus.20200045

Daly, M. (2022). Prevalence of Depression Among Adolescents in the U.S. From 2009 to 2019: Analysis of Trends by Sex, Race/Ethnicity, and Income. *Journal of Adolescent Health*, *70*(3), 496–499. https://doi.org/10.1016/j.jadohealth.2021.08.026

Doris, D. (2023). *Nigeria Population Distribution in 2021, by Age - GlobalData*. https://www.globaldata.com/data-insights/macroeconomic/nigeria-population-distribution-in-by-age/

Egenti, D. N. T., Ncheke, D. D. C., Umah, D. S. S., Egwim, C. E., Uzoagba, N., & De. Lilian C., O. (2021). Efficacy of Cognitive Behaviour Therapy on Reducing Maladaptive Behaviour Among Students Enrolled in Counselling, Psychology and Sociology of Education (Epse). *Journal of Advanced Psychology*, *3*(1), 53–69. https://doi.org/10.47941/japsy.611

Evans, M. (2021). *The Effects of Mental Health in Students' Academic and Social Success*. 1–66. https://nwcommons.nwciowa.edu/education_masters

Gebremedhin, H. T., Bifftu, B. B., Lebessa, M. T., Weldeyes, A. Z., Tsegay Gebru, T., & Petrucka, P. (2020). *Prevalence and Associated Factors of Psychological Distress Among Secondary School Students in Mekelle City, Tigray Region, Ethiopia: Cross-Sectional Study*. https://doi.org/10.2147/PRBM.S252779

Girma, S., Tsehay, M., Mamaru, A., & Abera, M. (2021). Depression and its determinants among adolescents in Jimma town, Southwest Ethiopia. *PLoS ONE*, *16*(5 May), 1–13. https://doi.org/10.1371/journal.pone.0250927

Hayes, L., Bach, P. A., & Boyd, C. P. (2010). Psychological Treatment for Adolescent Depression: Perspectives on the Past, Present, and Future. In *Behaviour Change* | (Vol. 27).

IHME, I. for H. M. and E. (2021, August 8). *New Global Burden of Disease analyses show depression and anxiety among the top causes of health loss worldwide, and a significant increase due to the COVID-19 pandemic*. Ihme. https://www.healthdata.org/acting-data/new-ihme-analyses-show-depression-and-anxiety-among-top-causes-health-burden-worldwide

Jibunoh, O., & Ani, C. (2022). A controlled clinical trial of a brief psycho-educational intervention for anxiety among in-school adolescents in Nigeria. *International Journal of Mental Health*, *51*(1), 24–31. https://doi.org/10.1080/00207411.2021.1891362

Kalin, N. H. (2020). The critical relationship between anxiety and depression. *American Journal of Psychiatry*, *177*(5), 365–367. https://doi.org/10.1176/appi.ajp.2020.20030305

Lorenzo-Luaces, L., Lemmens, L. H. J. M., Keefe, J. R., Cuijpers, P., & Bockting, C. L. H. (2021). The efficacy of cognitive behavioral therapy for emotional disorders. In *Handbook of cognitive behavioral therapy: Overview and approaches (Vol. 1).* (pp. 51–89). https://doi.org/10.1037/0000218-003

Méndez, J., Sánchez-Hernández, Ó., Garber, J., Espada, J. P., & Orgilés, M. (2021). Psychological treatments for depression in adolescents: More than three decades later. In *International Journal of Environmental Research and Public Health* (Vol. 18, Issue 9). MDPI. https://doi.org/10.3390/ijerph18094600

Nabunya, P., Damulira, C., Byansi, W., Muwanga, J., Bahar, O. S., Namuwonge, F., Ighofose, E., Brathwaite, R., Tumwesige, W., & Ssewamala, F. M. (2020). Prevalence and correlates of depressive symptoms among high school adolescent girls in southern Uganda. *BMC Public Health*, *20*(1), 1–11. https://doi.org/10.1186/S12889-020-09937-2/TABLES/4

NBS. (2020). Demographic Statistics Bulletin 2020. *National Bureau of Statistics*, *May*, 1–26.

Nuraeni, A., Suryani, S., Trisyani, Y., & Sofiatin, Y. (2023). Efficacy of Cognitive Behavior Therapy in Reducing Depression among Patients with Coronary Heart Disease: An Updated Systematic Review and Meta-Analysis of RCTs. *Healthcare (Switzerland)*, *11*(7). https://doi.org/10.3390/healthcare11070943

Obubu, M., Chuku, N., Ananaba, A., Sadiq, F. U., Sambo, E., Kolade, O., Oyekanmi, T.,

Olaosebikan, K., & Serrano, O. (2023). Evaluation of healthcare facilities and personnel distribution in Lagos State: implications on universal health coverage. *Hospital Practice*, *51*(2), 64–75. https://doi.org/10.1080/21548331.2023.2170651

Oltean, H. R., Hyland, P., Vallières, F., & David, D. O. (2019). Rational beliefs, happiness and optimism: An empirical assessment of REBT's model of psychological health. *International Journal of Psychology*, *54*(4), 495–500. https://doi.org/10.1002/ijop.12492

Onah, C. K., Azuogu, B. N., Ochie, C. N., Akpa, C. O., Okeke, K. C., Okpunwa, A. O., Bello, H. M., & Ugwu, G. O. (2022). Physician emigration from Nigeria and the associated factors: the implications to safeguarding the Nigeria health system. *Human Resources for Health*, *20*(1), 1–15. https://doi.org/10.1186/s12960-022-00788-z

Oud, M., De Winter, L., Vermeulen-Smit, E., Bodden, D., Nauta, M., Stone, L., Van Den Heuvel, M., Al Taher, R., De Graaf, I., Kendall, T., Engels, R., & Stikkelbroek, Y. (2019). Effectiveness of CBT for children and adolescents with depression: A systematic review and meta-regression analysis. *European Psychiatry*, *57*, 33–45. https://doi.org/10.1016/j.eurpsy.2018.12.008

Piro, R. S., & Taha, P. H. (2023). Effectiveness of brief cognitive behavior therapy on symptoms severity in relation to social avoidance among patients with panic disorder: a randomized controlled trial. *Italian Journal of Medicine*, *17*(3), 40–51. https://doi.org/10.4081/itjm.2023.1664

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *56*(3), 345–365. https://doi.org/10.1111/JCPP.12381

Purgato, M., Gastaldon, C., Papola, D., van Ommeren, M., Barbui, C., & Tol, W. A. (2018). Psychological therapies for the treatment of mental disorders in low- and middle-income countries affected by humanitarian crises. *Cochrane Database of Systematic Reviews*, *2018*(7). https://doi.org/10.1002/14651858.CD011849.pub2

Rasmussen, L. M. P., Patras, J., Handegård, B. H., Neumer, S. P., Martinsen, K. D., Adolfsen, F., Sund, A. M., & Martinussen, M. (2021). Evaluating Delivery of a CBT-Based Group Intervention for Schoolchildren With Emotional Problems: Examining the Reliability and Applicability of a Video-Based Adherence and Competence Measure. *Frontiers in Psychology*, *12*(June), 1–12. https://doi.org/10.3389/fpsyg.2021.702565

Saiful, M., Id, I., Rahman, E., Moonajilin, M. S., & Van Os, J. (2021). *Prevalence of depression, anxiety and associated factors among school going adolescents in Bangladesh: Findings from a cross-sectional study*. https://doi.org/10.1371/journal.pone.0247898

Shorey, S., Ng, E. D., & Wong, C. H. J. (2022). Global prevalence of depression and elevated depressive symptoms among adolescents: A systematic review and meta-analysis. *British*

Journal of Clinical Psychology, *61*(2), 287–305. https://doi.org/10.1111/BJC.12333

UNICEF. (2021). *Adolescent mental health statistics - UNICEF DATA*. https://data.unicef.org/topic/child-health/mental-health/

Watkins, E. (2017). Targeted psychological interventions may prevent depression in children and adolescents. *Evidence-Based Mental Health*, *20*(2), 62. https://doi.org/10.1136/eb-2017-102636

WHO. (2020). Guidelines on mental health promotive and preventive interventions for adolescents. In *World Health Organization*. http://apps.who.int/bookorders.

WHO. (2022). *WHO Adolescent mental health*. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

Wu, Y., Fenfen, E., Wang, Y., Xu, M., Liu, S., Zhou, L., Song, G., Shang, X., Yang, C., Yang, K., & Li, X. (2023). Efficacy of internet-based cognitive-behavioral therapy for depression in adolescents: A systematic review and meta-analysis. *Internet Interventions*, *34*(March), 100673. https://doi.org/10.1016/j.invent.2023.100673

Zunuraina, S., & Menaldi, A. (2020). Effectiveness of Brief Cognitive Behavioral Therapy in Reducing Psychological Distress in a Client With Social Anxiety Disorder: A Single-Case Study. *Advances in Social Science, Education and Humanities Research, Volume 494*.