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Supporting business educators and students against COVID-19 trauma using trauma-focused cognitive behavioral therapy

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Abstract

Background: The outbreak of COVID-19 manifests in peoples' mental health and psychological dispositions and may also result to acute distress, depression, anxiety and post-traumatic stress disorder (PTSD) on victims. The objective of this study was to support business educators' and students' mental health against coronavirus trauma using trauma-focused cognitive behavioral therapy (TF-CBT).

Methods: The participants (n = 74 – educators and students) who indicated PTSD symptoms based on the self-reporting questionnaire they filled, were randomly assigned to treatment and waitlist control groups. The TF-CBT manual was used for the intervention. The intervention was a 14-week treatment with 2 weeks follow-up meeting. Using repeated measures of Analysis of Variance, we determined the level of improvement of each participant in the treatment group against Coronavirus trauma at the end of the intervention.

Results: The study established that gender has no significant difference in determining the effects of Coronavirus trauma on participants. Through intervention, the PTSDs and depression arising from Coronavirus event were significantly reduced in the treatment group. Again, there was a significant improvement in the participants' general mental health at the end of the intervention. Hence, we established the implication for research and practice in line with the outcome of the study. The study advocates that TF-CBT should be employed by educational institutions in Nigeria to cushion the traumatic effects of coronavirus and future disasters on both workers and students.

Conclusion: We conclude that mental health problems remain a serious challenge among business educators and students in this COVID-19 pandemic era. The study established that low educational qualifications, PTSD symptoms and negative coping strategies are the factors aggravating the general low mental health of the study participants. Finally, we advocate that the educational institutions in Nigeria should adopt TF-CBT interventions to support staff and students' mental health against adverse effects of COVID-19.

Abbreviations: ANOVA = analysis of variance, ω^2 = omega squared, $\eta\rho2$ = partial eta squared, GHQ = general health questionnaire, GMHS = general mental health status, PCL-C = PTSD checklist-civilian, PTSD = post-traumatic stress disorder, SCSQ = simplified copying style questionnaire, TF-CBT = trauma-focused cognitive behavioral therapy, TG = treatment group, WCG = waitlist control group.

Keywords: business education students, business educators, COVID-19, mental health, pandemic, therapy, trauma, trauma-focused cognitive behavioral

1. Introduction

Coronavirus otherwise called COVID-19 caused challenges to government, organizations, families, educational institutions globally. The virus is a contagious and terminal disease that attacks and spreads from person to person in close contact.[1] The COVID-19 was first reported officially in a wholesale market in Wuhan City, China in early December 2019.[2] The International Committee on Taxonomy of Viruses in February 2020 assigned the name Severe Acute Respiratory Syndrome Coronavirus 2 to the coronavirus while the World Health Organization designated it as COVID-19.[3] Since the outbreak of the virus, as of September 2020 about 26,640, 247 cases have been recorded with about 874,963 deaths across the world.[4] As of September 5, 2020, about 54,743 confirmed cases have been recorded with a death toll of 1,051 in Nigeria.[5]

The mode of spread of COVID-19 is through sneezes, droplets of coughs from a patient, hand-shake or contact with an object touched by an affected person.[2] Affected persons of COVID-19 exhibit symptoms such as cough, fever, difficulty in breathing, digestive problems, loss of taste and smell, and experience severe acute respiratory syndrome Severe Acute Respiratory Syndrome Coronavirus 2.[6]

The Challenge of COVID-19 outbreak has caused governments of nations, corporate organizations, educational institutions and the society at large [7] to go on recess and total lockdown to contain the spread of the virus.[1] People were encouraged to stay indoors to avoid exposing themselves and to limit the spread of the virus. Several families lost their breadwinners and loved ones, and many are still living in extreme traumatic conditions because of the news and effects of the COVID-19 pandemic.[8] According to Orrù et al,[3] both academics and students alike have their own traumatic experiences to share.

Trauma is an emotional distortion or wound resulting in psychological injury which manipulates a person's neurobiology causing mental health problems.[8] Ortiz and Sinko[8] added that trauma can manifest in physical symptoms such as loss of physical energy, pains, paucity of gastrointestinal function, and mental symptoms such as poor concentration and loss of memory, guilt and mood swings. There is an increasing body of literature stating that COVID-19 stress can manifest in diverse forms on people, both young and old.[8,9] The American Clinicians noted that in youth, it manifests in physical symptoms such as aches and pains and also shows in behavioral symptoms such as regression, agitation and withdrawal. However, previous studies established that trauma has no mental boundaries about peoples' age, gender, socioeconomic, ethnicity and race.[10] Therefore, if the traumatic symptoms are left unaddressed, it may result in misdiagnosed behavioral health challenges, mental illness, heart disease, cancer and mortality.[7] Several authors noted that protracted trauma that is not treated with early intervention may permanently affect peoples' Deoxyribonucleic Acid, make a victim vulnerable to future stressors and even be transmitted to future generations.[7,9] Several persons across the world today, including educators and students, are suffering from clinical symptoms of COVID-19 depression.[11]

Several studies have shown that the outbreak of pandemics manifests in peoples' mental health and psychological problems such as distress, depression, anxiety and post-traumatic stress disorder (PTSD).[12] Ehlers and Clark[13] postulated that people after going through a traumatic event, are prone to negative assessment and sequelae of the trauma. Researchers also revealed that many of the affected persons end up adopting maladaptive approaches to sustain PTSD symptoms such as negative emotions, arousal symptoms, and invasion.[14]

Emerging researches affirmed that there are relationships between exposure to traumatic events and chronic behavioral health disorders of people who passed through a traumatic event.[15] Many of the victims of the traumatic events often have difficulties in their education, employment, and other endeavors of life which if not handled may cause them to resign to excessive consumption of tobacco, marijuana and alcohol.[15] Similarly, Xiang et al[16] noted that clients or victims of traumatic events, such as educators and students experience mental health problems such as panic, anxiety, distress, feeling of helplessness, and restlessness. These imply that educational institutions must devise appropriate interventions to help both staff and students who passed through traumatic events like COVID-19 and those living under post-trauma to overcome their behavioral and mental health challenges.[16] Several interventions have been recommended for educational institutions to support people who are living with a traumatic experience or passed through traumatic events like COVID-19.[17,8] Some of such interventions may be negative or positive.[18] Although, many studies have been conducted on the psychological impact of COVID-19 on PTSD, there is paucity of such studies that aimed at addressing the mental health of Technical, Vocational Education, and Training educators and students, which includes business educators and business education students, using trauma-focused cognitive behavioral therapy (TF-CBT), which is the intent of this study.

TF-CBT is an effective therapy for addressing PTS symptoms and PTSD in individuals. It is also a therapeutic treatment for depressive symptoms and trauma-related as well as general behavior problems resulting from exposures to traumatic events such as viral diseases, war or sexual abuse/harassment.[19] Dialectical behavior therapy uses emotional regulations and mindfulness to address negative thoughts and behaviors.[20] Multimodal therapy employs interconnected modalities such as behavior, cognition, sensation, affect, imagery, drug/biological considerations, and interpersonal factors to treat psychological issues on people.[21] TF-CBT is adopted in this study because several authors agree that among the CBT methods for addressing PTSD, fear, and distress, it is the most effective of all.[22] Take for instance in randomized controlled trials conducted by some researchers, TF-CBT was found highly effective in reducing PTSD, PTS symptoms, depression, and trauma-related challenges when compared with non-CBT interventions[19,23] Again, several follow-up studies have shown evidence of sustained benefit of post-treatment between 6-months and 2-years.[24,25] The TF-CBT in this study focuses on the realization of the widespread impact of COVID-19 trauma, recognizing the signs and symptoms of trauma in participants and responding through intervention therapy to avert the traumatization and high rate of PTSDs and depressive disorders among staff and students of tertiary institutions including business educators and students after COVID-19 traumatic events.

Business educators are individuals who have been trained pedagogically and obtained a minimum of Nigeria certificate in education and/or bachelor degree in business education programme in an accredited tertiary institution,[26] to impact skills, knowledge and attitude to business education students at the tertiary education level.[27,28] Business educators are charged

with the responsibility of teaching business courses such as accounting, marketing, management, business law, entrepreneurship, economics, office technology, and computer courses among others.[27] On the other hand, business education students are undergraduate and postgraduate students who are admitted to study business education programme in tertiary institutions.[29] The students are prepared to acquire professional and pedagogical skills, knowledge and attitudes to function as educators or business managers, consultants and experts after graduation. It is in literature that lecturers and students including those in business education programmes are exposed to high viral attacks and oftentimes experience very high traumatic stress and mental depressions in schools particularly during a viral epidemiologic period like COVID-19.[30] Authors agree that lecturers and students who attend school during traumatic events suffer general metal health challenges, acute trauma, dehydration, acute psychosocial stress and worries which may influence their reasoning, attitude and relationship with others.[31] Such lecturers also lack job satisfaction and are always absent from their work.[32] PTSD can be very hazardous to business educators and students because of the type of work together with the equipment, tools and chemicals they use in overcrowded laboratories and classrooms, especially in developing countries like Nigeria.[33] Researches have revealed that other things that may contribute to the lecturers' distress and worries during the COVID-19 era are dearth of administrative support in providing an alternative approach to teaching and learning.[34,35]

Based on the literature reviewed, we perceived urgency in Psychopathologic interventions in educational institutions in Nigeria to reduce the effects of COVID-19 trauma and its consequences on staff and students. A delay of action can lead to an advanced level of emotional-behavioral distress by victims of the COVID-19 event. Therefore, we determined the effects of TF-CBT on the mental health of business educators and students against COVID-19 trauma in South-East, Nigeria. We hypothesized that:

o There is no significant difference in the level of effects of COVID-19 trauma between the treatment group (TG) and waitlist control group (WCG) based on gender.
o There is no significant difference in the negative avoidance strategies employed against COVID-19 trauma between the treatment and WCGs based on educational qualification.
o The PTSD would be lessened at the end of the intervention on the TG when compared with its magnitude before the treatment.
o No significant improvement difference will be observed among the participants in the TG based on age.

2. Methodology

2.1. Ethical approval

Approval for the ethical research was obtained from the Research Ethics Committee of the Faculty of Vocational and Technical Education, University of Nigeria, Nsukka with a Registration Number: ERA/VTE/088.

2.2. Design

This study adopted 2-group random assignment pretest–posttest design. First, the design enabled the researchers to compare the groups using several measures to determine if the studied groups are indeed equivalent.[36] Again, it helped to ensure that the 2 groups have similar traumatic conditions (COVID-19) at baseline (time 1) before the intervention and to determine the level of decrease/improvements on the TG compared with the WCG in the trauma at the close of the treatment (time 2). Partial eta squared (η_ρ^2) was used in line with Lakens,[37] while omega squared (ω^2) helped to correct any bias emanating from the use of η_ρ^2 particularly in determining the effect of group sizes in the intervention.[38]

We used univariate Analysis of Variance (ANOVA) to assess the magnitude of the mental health distortion and trauma experienced by the participants. IBM SPSS (IBM Corporation, Armonk NY, USA) (version 21) was used to screen for the missing values and possible violation of statistical assumptions. The outcome showed that there were no missing values thus, increasing our confidence to proceed to analysis.

2.3. Determination of population sample sizes using power analysis

The population of the study was 93 business educators and students. We used GPower 3.1 Software to estimate the population sample sizes and to ensure a high effect size for the study groups using statistical power of 0.92.[39,40] Several authors recommended that 0.80 and above is considered adequate for a study while 0.70 or lower is insufficient.[41–43] To determine the sample size that will be sufficient for the study, the following parameters were used to run the calculations in GPower: statistical test (F tests – ANOVA: repeated measures, within factors) [Experimental group: 2 tails, effect size d = .83, α err prob = .05, power = 1- β err prob) = 0.92, allocation ratio of N2/1 = 1. For the statistical tests, we used test family (t test), mean = difference between the 2 groups (independent mean), for the noncentrality parameter, we used d = 3.5843878, critical t =

Table 1

Demographic characteristics of the business educators and students showing baseline equivalence.

Group	N = 74 (%)	Male n (%)	Female n (%)	Age (mean ± SD)	χ^2	Significance
TG	N = 39 (53)	22 (56)	17 (44)	34 ± 2.80	0.886	0.482
WCG	N = 35 (47)	24 (69)	11 (31)	33 ± 2.72	0.789	0.495
TOTAL	N = 74 (100)	N = 46 (62)	N = 28 (38)	33.5 ± 2.76*	0.848	0.487
EQ%	PhD 18 (24), MSc = 12 (28), BSc 9 (12), US 35 (47)					

BSc = bachelor of science, EQ = educational qualifications, MSc = master of science, n = number, N = population sample, PhD = doctor of philosophy, SD = standard deviation, TG = treatment group, US = undergraduate students, WCG = waitlist control group.

* Mean age, χ^2 = Chi square.

1.986158, Df = 68, the group 1 sample size = 42, group 1 sample size = 42, total = 84 while actual power was 0.8902278]. [Control group: effect size d = .83, α err prob = .05, power 1-β err prob = 0.94, allocation ratio was N2/1 = 1]. For the statistical tests, we used noncentrality parameter d = 3.7013528, critical t = 1.8965908, Df = 65, group sample size = 31, group sample size = 35 total size = 66, actual power = 0.9626868.[44] Based on the above statistical analysis, it was inferred that 33 and 28 participants for treatment and WCGs, respectively would be sufficient to conduct the study. The demographic characteristics of the participants showing baseline equivalence are presented in Table 1.

The researchers with 3 research assistants accessed 93 business educators and students, using the self-reporting questionnaires on COVID-19 mental health depression and trauma. Besides showing signs of traumatic stress, the eligibility criteria for the study included participants showing a high degree of disturbance of the general mental health status (GMHS). The eligibility criteria for participation were determined using the PTSD checklist-civilian version questionnaire (PCL-CQ) developed by the researchers. A respondent who scored a mean value between 1.50 and 2.49 is classified as not having COVID-19 traumatic problem and therefore were excluded from the study, while those whose mean scores ranged between 2.50 and 4.00 on the COVID-19 trauma statements were considered as having serious trauma and were included in the study.[19,23]

From the 93 accessible population, we used convenience sampling technique to identify 74 business educators and students who met the COVID-19 trauma symptoms inclusion criteria (see Fig. 1). Afterwards, they were randomly assigned to treatment and waitlist groups (TG and WCG). The business educators are the faculty members that teach business education courses in the department of business education in the 2 universities studied. The reason for using both the educators and students is because they all share the same academic environment and might face similar post-traumatic experiences after the ease of the national and global lock-down. More so, the researchers would wish to determine if there is any discrepancy in post-traumatic distress symptoms between the educators and students after being exposed to the self-reporting instrument (PCL-CQ). The randomization process was conducted by sending an email to the participants who met the criteria benchmark with 2 inscriptional options: 1 and 2. They were asked to pick one of the options but we blinded the names of the groups. Those who picked 1 were assigned to the WCG while those that picked 2 were assigned to TG (see Table 1). To ensure that the groups are equivalent, we used a randomization check on the groups' demographic variables such as gender, age and level of education as well as their degree of traumatization. The participants' age range is between 17 and 60 years. The age groups were purposely determined (17–31, 32–46, and 47–60 years) to reflect young, middle, and old age groupings within the educational institutions. Before the commencement of the treatment, informed consents were obtained from all the participants and the Heads of the Department of Technical, Vocational Education, and Training institutions studied. However, 19 out of the 93 accessed were excluded based on reasons ranging from not being free to participate to not having COVID-19 trauma and PTSD symptoms.

The recruitment exercise lasted for 2 months. As faculty members, it was easy for the researchers to collect phone numbers and email addresses of business educators and students from the various heads of departments in the faculty of vocational and technical education of the institutions studied and WeChat platforms of different groups. Due to COVID-19 pandemic lockdown, we used email, WeChat, WhatsApp mentoring platforms, and Google Form to solicit interested participants.[45]

2.4. Measures

We used 3 questionnaires (general health questionnaire scale – GHQ-12, PCL-C version, and simplified copying style questionnaire – SCSQ) to elicit information from the participants on the GMHS, their post-traumatic stress symptoms about COVID-19 and postnegative strategies they adopted to avert the effect of the pandemic.

2.4.1. General health questionnaire scale (GHQ-12). First, we used a GHQ-12 for participants' self-assessment.[42] This instrument has been tested by Chinese samples and its psychometric properties were found reliable as a self-reporting tool for finding out the state of general mental health of people exposed to traumatic events.[41] The GHQ-12 is a 12-item questionnaire with response options ranging from 0 (not at all) to 9 (often time). Mean scores 0 to 10, 11 to 20, and 21 to 6 indicate a low, mid, and high degree of disturbance of the GMHS. Saravanan et al[46] highlighted those 15 points as an indication that a person tends to develop psychological trauma.

2.4.2. Post-traumatic stress disorder checklist-civilian version questionnaire (PCL-CQ). The PCL-C was developed by the researchers in line with previous researchers to assess COVID-19 PTSD symptoms on participants.[47] PCL-C was a 21-item questionnaire with response options ranging from 1 (never) to 5 (advance). Each of the item statements was assigned 3 points, and a participant with a cutoff score of 38 and above is considered as having COVID-19 PTSD symptoms.[48] Leveraging on past researches on TF-CBT, and clinical involvements in handling traumatized clients, the researchers consensually raised best-fit items statements for the study. All the items were tested using confirmatory factor analysis, thus sieving out the poor items.

2.4.3. Simplified copying style questionnaire (SCSQ). The SCSQ was a 15-item questionnaire with 2 subscales (positive and negative coping) with response options 0 (not at all) and 3 (adversely). The instrument was adapted from Xie[18] study on the "initial exploration of reliability and validity of simplified coping styles questionnaire. We used this instrument to measure the negative coping approaches adopted by the participants, thus a higher score on the negative scale indicates the frequent application of negative coping approaches on the COVID-19 trauma.

All the instruments were subjected to content and face-validation by a 7-man team of experts (CBT practitioners and psychologists) from University of Nigeria, Nsukka. Similarly, the reliabilities of the instruments were determined using the Cronbach Alpha which yielded coefficients of 0.831 for GHQ-12, 0.797 for PCL-C and 0.824 for SCSQ (see Fig. 2). While the questionnaires were developed based on the COVID-19 trauma context, the intervention process for mitigating the adverse effects of the COVID-19 trauma was based on the TF-CBT Manual (TFCBTM) developed by the researchers in line with SAMHSA recommendations.[10]

CONSORT 2010 Flow Diagram
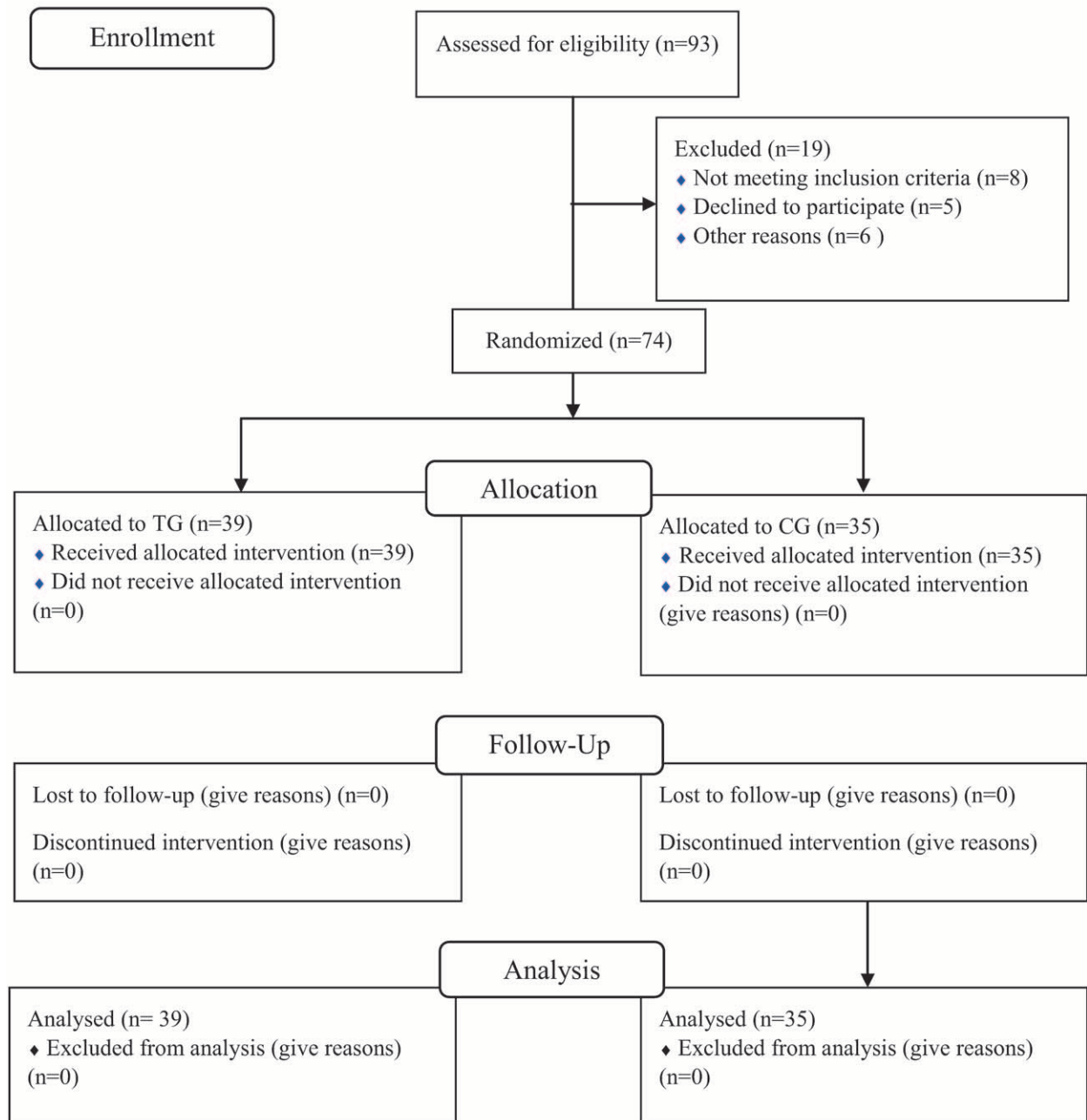
Figure 1. Consort flow diagram, adapted from: http://www.consort-statement.org/consort-statement/flow-diagram.

2.4.4. COVID-19 trauma-focused cognitive behavioral therapy (TF-CBT).
The psychological intervention program was guided by TF-CBT. The manual (TFCBTM) was adapted from the TF-CBT and SAMHSA recommendations and guidelines for PTSD National Child Traumatic Stress Network[48], Substance Abuse and Mental Health Services Administration[10] and modelled after China State Council guidance for mental health workers and psychological supports at emergency condition.[49,50]

2.5. Treatments

We used TF-CBT to see how traumatic stress disorder can be reduced in the participants.[3,10,48] Previous studies showed that TF-CBT has been applied on European, U.S. Caucasian, Australian, and African diverse workers and youth, and it yielded positive results in the different domains.[48] Therefore, we considered TF-CBT a good fit for addressing COVID-19 trauma effects on psychological behaviours of the business

Figure 2. Cronbach alpha values and number of experts that validated the instruments.

educators and students. Considering the multifaceted nature of COVID-19 trauma, we empirically tested the effects of TF-CBT on business educators and students. Also, the 6 princi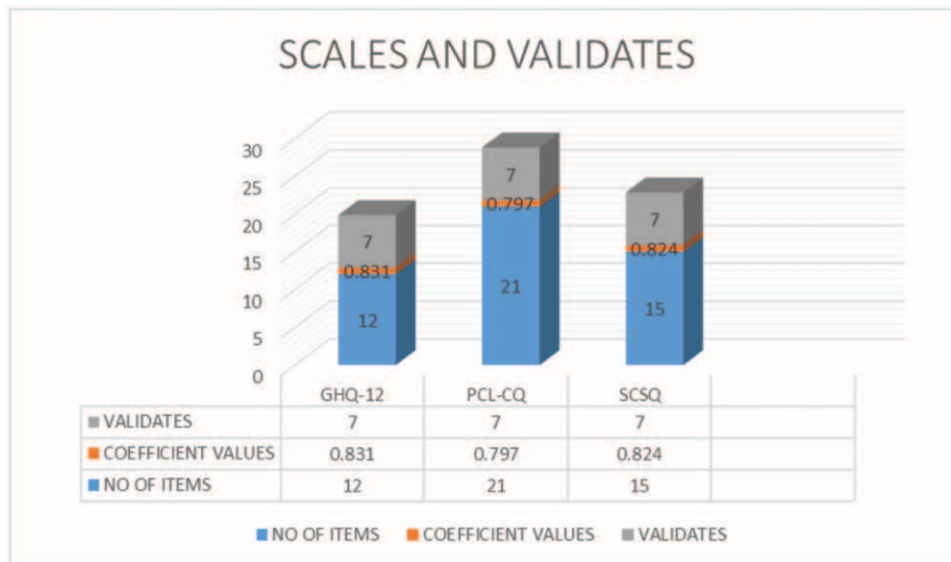ples of the trauma-informed approach, namely: safety, trustworthiness and transparency, peer support, collaboration and mutuality, cultural, historical, and gender issues were taken into cognizance.[51–53]

The intervention comprehensively assessed the risk factors that contributed to the psychological problems. The risk factors include poor mental health of the participants before and during the COVID-19 event, affected family members, other life-threatening issues, fears, panic, family size, and level of household income.[54]

2.5.1. Preliminary exercise/meetings. The treatment was administered with the help of 5 professional psychologists and trained CBT practitioners who were trained in emergency psychology.[8] The researchers, the Psychologists and trained CBT practitioners had 1-week preliminary virtual meetings to discuss the processes, administration and rules underpinning the experimental procedures.

2.5.2. Control of extraneous variables. Since different experts/ research assistants (CBT practitioners and psychologists) administered the intervention package, the tendency of having discrepancies in the implementation process is very apparent. Therefore, the researchers eliminated such factors that may act as threats to the experiment or pose problems to the validity of data collected and research outcomes, by organizing a 1-week virtual meeting of 60 minutes per/a day to explain and discuss the intent, objectives, roles, and time schedules as well as the rules guiding the administration of the intervention therapy.[55] Again, researchers' developed TFCBTM was provided to all the research assistants to guide them to ensure uniformity of outcome.

2.5.3. Active treatment of trauma-focused cognitive behavioral therapy (TF-CBT). The intervention program was a 14-week program with weekly sessions running for 90 minutes.[32]

We applied TF-CBT using exposure therapeutic procedures designed to assist participants in confronting dysfunctional thoughts, worries, fear, trauma and stress as well as high risk-stimuli caused by COVID-19.[56] The procedures also involved using systematic desensitization of pairing trauma-related memories and its reminders to muscle relaxation which exhibit fear and chronic PTSD trauma.[32] Similarly, the treatment encompassed imaginal and vivo exposure to the trauma triggers which often results to fear and emotional distress.[32,56] First, participants were guided on how to assess potential risk factors that cause psychological trauma. Secondly, they were taught how to manage feelings such as fear of contracting the COVID-19, how to manage the boredom of staying at home, anxieties, frustration, and panic.[3,17] All the intervention processes were delivered via the internet using the Zoom application. Previous studies have established that video/teleconferencing apps and internet-based therapies have been very effective and have shown clinicians satisfactory results in improving clients' mental health and PTSD trauma.[57,58]

To maintain uniformity of treatment and ensure that the study received adequate treatment integrity, all the participants in the 2 groups (TG and WCG) were pretested at Time 1 before administering the intervention package (TF-CBT) to the TG only. After the intervention, we conducted a post-test (time 2) which was followed with a follow-up program (approximately 2 months apart) for the 2 groups to elicit information from the participant on the improvement they have recorded and also to take the second assessment (time 3). The Time 2 assessment involves administering the self-report questionnaire PCL-C to determine if there was any improvement as against their initial trauma symptoms. During the follow-up sessions, participants were allowed to post and share their experience of the TF-CBT intervention and how they were able to adjust psychological feelings. The 2-week follow-up program marked the conclusion of the intervention.

Efforts were made to control for self-biased and specifically, we adapted the following approaches: the experts' guidelines on PCL-C and TF-CBT to arrive at a suitable intervention statement

for the study; the statements are in alignment with the intent of the study and are logically clear; and experts' validation procedures consciously controlled for study-wise error rates (ie, Type I & II errors). Again, we developed and disseminated psycho-educational information materials on how to stay safe during the lockdown to all the participants and encouraged them to share the same with their family members.

2.5.4. Control condition.
The WCG showed signs of traumatic stress, high degree of disturbance of the GMHS and had mean scores between 2.50 and 4.00 on the COVID-19 trauma statements based on the result of the self-report questionnaire (PCL-C) administered to all the participants during the selection process. However, the WCG participants picked inscriptional options 1 and were randomly assigned to the WCG in line with the randomization criterion. Again, the WCG participants never received any treatment (TF-CBT) during the experimental period but were assessed at time 1, time 2 (post-test), and time 3 (follow-up) to determine if there was any significant improvement in the TG when compared with them. Though, 2 weeks after the conclusion of the experimental study, the WCG members were exposed to the same treatment given to the TG and the result showed that they too showed rapid improvement as the TG, however, their results were not recorded in this study.[59]

3. Results

The demographic data of the participants are presented in Table 1. The researchers accessed 93 business educators and students. However, after administering the self-reporting questionnaires (PCL-CQ) on COVID-19 mental health depression and trauma, about 19 of the participants were excluded because they did not meet the inclusion criterion. The inclusion criterion includes showing signs of traumatic stress, and a high degree of disturbance of the GMHS. It also includes that a respondent must score a mean value between 12.50 and 4.00 on the PCL-CQ self-reporting test. The study sample was therefore 74 business educators and students from 2 federal universities in South-East, Nigeria (University of Nigeria, Nsukka and Nnamdi Azikiwe University, Awka, Anambra State). These were the number that met the inclusion criterion.

The age range of the participants is between 17 and 60 years. The mean age of the TG was 34 ± 2.80 years while the WCG was 33 ± 2.72 years. By gender, the TG was 39 (53%) comprising of 22 (56%) males and 17 (44%) females, $\chi^2 = .886$, $P = .482$, while the WCG was N = 35 (47%) consisting of 24 (69%) males and 11 (31%) females, $\chi^2 = .789$, $P = .495$ implying that the groups have no significant gender and age differences. We used Chi-square (χ^2) statistic to test if there are categorical data differences in the participants' characteristics such as age and gender.[60] Out of the 74 participants, 24% of them are PhD holders, 28% had MSc, 12% had BSc, and 47% are undergraduate students with university admission qualifications (WAEC/NECO and JAMB).

First, we conducted a Univariate ANOVA analysis to test that COVID-19 trauma would not be significantly determined by gender. The result showed that no significant difference exists in the COVID-19 trauma experiences of the TG and WCG based on their gender, F $(1,72) = .085$, $P = .732$, $\eta_\rho^2 = .004$, $\omega^2 = .002$ (see Table 2). At time, the PCL-CQ scores obtained according to gender were: TG: male (44.22 ± 2.92), female (43.97 ± 2.01), while WCG: male (40.78 ± 1.99), female ($39.94 \pm .99$). The result of the η_ρ^2, ω^2 showed that gender differences had no interference with ones' exposure to COVID-19 trauma.

We administered GHQ-12, PCL-CQ, and SXSQ at time 1 to the participants and the following scores were obtained across the 2 groups based on their level of education (PhD, MSc, and Us-O' level): GHQ-12 (22.15 ± 10.03; 21.87 ± 9.26; 24.14 ± 9.28), PCL-CQ (39.43 ± 5.37; 40.86 ± 4.76; 41.29 ± 5.28), and SCSQ (21.29 ± 12.82; 20.28 ± 11.88; 23.86 ± 9.77), respectively (see Table 3).

The scores showed little differences in the general mental health, PTSD, and negative coping strategies adopted by the participants. For instance, on GHQ-12, and negative coping strategies, the study found that participants with O' level qualifications had higher scores than the other 2 groups (Ph.D and M.Sc), while those with PhD ranked second in the score. On the PCL-CQ, the participants with O' level qualification still had the highest scores, followed by the participants with MSc while those with PhD had the least score. Based on the scales of the scoring options, we noted that all the participants had a high

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Table 2

Summary statistics for univariate (ANOVA) of COVID-19 trauma of participants' by gender.

	TG (N = 39)		WCG (N = 35)						
	Male (n = 22)	Female (n = 17)	Male (n = 24)	Female (n = 11)					
Outcome	M ± SD	M ± SD	M ± SD	M ± SD	Df	F	Significance	η_ρ^2	ω^2
PCL-CQ	44.22 ± 2.92	43.97 ± 2.01	40.78 ± 1.99	39.94 ± .99	(1,72)	0.085	0.732	0.004	0.002

η_ρ^2 = partial eta squared, ω^2 = omega squared, Df = degree of freedom, M ± SD = mean and standard deviation, N = number of the participants, PCL-CQ = post-traumatic stress disorder checklist-civilian version questionnaire, TG = treatment group, WCG = waitlist control group.

Table 3

Summary statistics for univariate (ANOVA) of COVID-19 trauma of participants' educational qualifications at baseline.

Outcome EQ	GHQ-12 M ± SD	PCL-CQ M ± SD	SCSQ M ± SD	Df	F	Significance	η_ρ^2	ω^2
PhD	22.42 ± 10.03	39.43 ± 5.37	21.29 ± 12.82	(1,72)	0.085	0.886	0.003	0.001
MSc	21.87 ± 9.26	40.86 ± 4.76	20.28 ± 11.88	(1,72)	0.078	0.783	0.004	0.002
US	24.14 ± 9.28	41.29 ± 5.28	23.86 ± 9.77	(1,72)	0.093	0.812	0.002	0.001

ω^2 = omega squared, η_ρ^2 = partial eta squared, Df = degree of freedom, EQ = educational qualification, GHQ = general health questionnaire, M ± SD = mean and standard deviation, MSc = master of science, PCL-CQ = post-traumatic stress disorder checklist-civilian version questionnaire, PhD = doctor of philosophy, SCSQ = simplified copying style questionnaire, US = undergraduate students.

degree of disturbance of the GMHS of COVID-19 (GMH > 36). The same was observed on the COVID-19 PTSD symptoms (PTSD > 38) and all of them applied negative avoidance strategies. The scores showed the level of adverse effects of COVID-19 trauma on all the participants in the 2 groups (TG and WCG) across the educational qualifications. The groups did not differ in the level of COVID-19 trauma, PhD: F (1,71) = 0.085, P = .886, $\eta_\rho^2 = 0.003$, $\omega^2 = 0.001$; MSc D: F (1,71) = 0.078, P = .783, $\eta_\rho^2 = 0.004$, $\omega^2 = 0.002$. O' level: F (1,71) = 0.093, P = .812, $\eta_\rho^2 = 0.002$, $\omega^2 = 0.001$.

Results in Table 4 showed repeated measures (ANOVA) of COVID-19 trauma of participants by treatment condition and time 1, 2, and 3. At time 1, the level of COVID-19 trauma of participants measured by TF-CBT were 33.50 ± 20.93 and 30.17 ± 19.09 for the TG and WCG groups, respectively. However, at time 2 and 3 the results showed significant effects of TF-CBT on the TG participants on COVID-19 trauma and their PTSD on the TG but no improvement was observed on the WCG F (1,71) = 221.378, P = .000, $\eta_\rho^2 = 0.927$, $\omega^2 = 0.885$. From the result, it is observed that the values of the η_ρ^2 and ω^2 were very high implying that there was a significant main effect based on the TF-CBT treatment the groups received. Also, the 1.000 of the observed power revealed that the study had sufficient statistical power, thus, the outcome is considered acceptable. In line with this result, we did not reject the hypothesis that COVID-19 trauma would be lessened at the end of the intervention on the TG when compared with its magnitude before the treatment. This is further justified by the results of time 1, 2, and 3 (see Table 4).

Furthermore, the TG group demonstrated significant improvement in their general mental health and PTSD after the intervention time 2 (postintervention) = 7.67 ± 1.37, and time 3 (follow-up) = 5.22 ± .98. A great improvement was also observed on the TG about the COVID-19 trauma and PTSD symptoms at time 2 (postintervention) = 18.06 ± 3.89, time 3 (follow-up) = 14.73 ± 2.46. On the contrary, test results showed that general mental health and PTSD symptoms remained considerably high both at the beginning [GHQ-12 (time 1 = 24.14 ± 9.28); PCL-CQ (time 1 = 41.29 ± 5.28)] and after the intervention for the WCG [GHQ-12 (time 2 = 25.39 ± 9.49); PCL-CQ (time 2 = 43.61 ± 4.88, time 50.18 ± 6.20)]. The result on the interaction of time × treatment showed that the participants in TG had great improvement in their GMHS and COVID-19 trauma and PTSD symptoms but those in WCG had a deteriorated experience as their GMHS and COVID-19 trauma and PTSD symptoms continued to grow worse (see Table 4).

Finally, we hypothesized that no significant improvement difference was observed on the participants of the TG based on age. The result of repeated measures ANOVA showed no

significant difference in the mean scores of the participants on GHQ-12, PCL-CQ, and TF-CBT among the age groups 17 to 31 and 32 to 46 years as against those in age range of 47 to 60 years at the baseline time 1 [17–31 years (GHQ-12 = 21.42 ± 9.77; PCL-CQ = 38.79 ± 4.56; TF-CBT = 33.48 ± 19.82)]; [32–46 years (GHQ-12 = 22.16 ± 10.63; PCL-CQ = 37.65 ± 4.43; TF-CBT = 32.37 ± 18.71)]; [47–60 years (GHQ-12 = 25.24 ± 9.87; PCL-CQ = 41.66 ± 6.65; TF-CBT = 36.59 ± 19.63)] (see Table 5). The high scores of the older participants could be blamed on accumulated worries on how to carter for their families during the lockdown considering the level of their household income.[61] However, a significant improvement in the GMH and PTSD symptoms were recorded ($\eta_\rho^2 = .943$) after the treatment (at time 2) across all the age groups (17–31 years: 13.29 ± 10.53; 32–46 years: 11.11 ± 4.74; 47–60 years: 13.60 ± 10.67), implying that TF-CBT was very effective despite the participants' age differences.

The results in Table 6 on posthoc analyses via Bonferroni revealed that the general mental health (GMH) of the business educators and students in the TG significantly improved over time as against those in the WCG which did not show any significant improvement. As shown in the posthoc result, the general mental health scores between the 2 groups (TP and WCG) at the baseline assessment (time 1) showed no statistical difference as all the participants across the 2 groups demonstrated a high degree of disturbance of the GMH, but at time 2, the GMH level of the TG in contrast with the WCG statistically improved well (see P-values < .001). Also, posthoc analyses result showed that the PTSD against COVID-19 symptoms at the baseline (time 1) showed no statistical difference across the TG and WCG. However, the PTSD of the participants in the TG in contrast with the WCG at time 2 and 3 were statistically different (see P-values < .001), indicating improvement.

4. Discussions

The study was conducted to support the mental health of business educators and students against COVID-19 trauma using TF-CBT on adaptive formative assessment instruments. The intent of this study was justified and is consistent with findings of previous studies that people often experience psychological disorders like intrusive memories, fear of not being safe, brain drain, and altered emotional stimuli after a traumatic event had occurred.[61,62]

First, the study tested the effect of gender differences on general mental health (GMH) and the adverse reactions to COVID-19 trauma. The result showed that gender differences had no significant effects on the participants' GMH and COVID-19 trauma. This finding is in agreement with Amr et al[63] and

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Table 4

Summary statistics for repeated measure (ANOVA) of COVID-19 trauma of participants by treatment condition and time.

| Outcome | TG (N = 39) | | | WCG (N = 35) | | | Df | F | Significance | η_ρ^2 | ω^2 | OP |
	Time 1 M ± SD	Time 2 M ± SD	Time 3 M ± SD	Time 1 M ± SD	Time 2 M ± SD	Time 3 M ± SD						
GHS	22.15 ± 10.03	7.67 ± 1.37	5.22 ± .98	24.14 ± 9.28	25.39 ± 9.49	31.18 ± 10.61	(1,72)	.185	.879	.006	.003	–
CT & PTSDS	40.15 ± 5.07	18.06 ± 3.89	14.73 ± 2.46	41.29 ± 5.28	43.61 ± 4.88	50.18 ± 6.20	(1,72)	.278	.791	.007	.004	–
Treatment	33.50 ± 20.93	14.17 ± 10.12	9.38 ± 6.77	30.17 ± 19.09	32.11 ± 18.24	43.17 ± 19.02	(1,72)	221.37	.000	.927	.885	1.000
ITT	33.50 ± 20.93	19.33 ± 10.81	4.79 ± 3.35	30.17 ± 19.09	1.94 ± 0.85	11.06 ± 0.78	(1,72)	306.01	.000	1.73	.903	1.000

ω^2 = omega squared, η_ρ^2 = partial eta squared, CT & PTSDS = COVID-19 trauma and PTSD symptoms, Df = degree of freedom, GHS = general health status, ITT = interaction of time × treatment, M ± SD = mean and standard deviation, OP = observed power, PTSD = post-traumatic stress disorder, TG = treatment group, WCG = waitlist control group.

Table 5

Repeated measure ANOVA of general health status, COVID-19 trauma and PTSD symptoms and treatment of TG participants based on age across different times of measurement.

Age group	17–31 (17)		32–46 (14)		47–60 (8)					
Outcome	Time 1 M ± SD	Time 2 M ± SD	Time 1 M ± SD	Time 2 M ± SD	Time 1 M ± SD	Time 2 M ± SD	Df	F	η_ρ^2	Significance
GHS	21.42 ± 9.77	6.74 ± 2.46	22.16 ± 10.63	6.98 ± .69	25.24 ± 9.87	7.59 ± 1.68	(1,72)	0.087	0.005	0.877
CT & PTSDS	38.79 ± 4.56	18.43 ± 4.66	37.65 ± 4.43	17.85 ± 4.32	41.66 ± 6.65	19.63 ± 5.85	(1,72)	0.069	0.007	0.785
Treatment	33.48 ± 19.82	13.29 ± 10.53	32.37 ± 18.71	11.11 ± 4.74	36.59 ± 19.63	13.60 ± 10.67	(1,72)	221.38	0.943	0.000

η_ρ^2 = partial eta squared, CT & PTSDS = COVID-19 trauma and PTSD symptoms, Df = degree of freedom, GHS = general health status, M ± SD = mean and standard deviation, PTSD = post-traumatic stress disorder, TG = treatment group.

Busari [64] but contradicted the findings of some authors who noted that gender has significant effects on treatments (see Tolin & Foa[65]; Harris Interactive[66]; Kajantie and Phillips[31]). For instance, Liu et al[62] found that women in Wuhan City China showed higher post-traumatic distress symptoms (PTDS) than their male folks in negative alteration in mood, hyperarousal and tendency of re-experiencing trauma. However, the discrepancy might be as a result of differences in experimental procedure, population status, research outcomes and the types of stressor studied or possibly TF-CBT not being influenced by gender.[67,68] Hence, this study advocates that TF-CBT experts and counselors ought to integrate gender-sensitive cum gender-transformative interventions that aim at mitigating the general mental health of educators and students.

Again, we explored the possible effects of the TF-CBT program on the general mental health and COVID-19 trauma of the participants. The study established that there was a significant effect of TF-CBT on the overall mental health of the TG participants but higher adverse effects were observed on the WCG. There was a great change in the thinking patterns of the participants who received treatment which resulted in a reduction of the degree of disturbance of the GMHS and COVID-19 PTSD symptoms of the group members after the intervention as shown in the result of Time 2. These findings are congruent with previous studies which showed that TF-CBT intervention can effectively reduce traumatic distress people experience due to traumatic event like COVID-19.[31] The findings also supported previous studies which found that TF-CBT reduced symptoms of PTSD like depression and problem behaviours.[69,70]

Approximately most of the participants showed evidence of having psychological problems with PTSD symptoms and adoption of negative coping strategies at the beginning of the intervention. Again, our findings on the need for educational administrators to create awareness and employ a strategy to combat the impact of trauma on educators and students strengthened Honsinger and Brown[71] who established that it is important to create awareness about the impact of trauma on the students and also adopt an effective strategy that can enhance teaching and learning process during a life-threatening era like COVID-19 period. Our findings strengthen SAMHSA,[10] which posits that educators can address students' needs and promote effective learning during and after a traumatic event like COVID-19 using a trauma-informed approach like TF-CBT. This is also congruent with Honsinger and Brown[71] who noted that the use of a trauma-informed approach can help educators

Table 6

Bonferroni–Holm (Posthoc test) pairwise comparisons of effect of TF-CBT intervention on general mental health and post-traumatic stress disorder of TG and WLG Participants across times of measurement (T1–3) using GHQ-12 and PCL-CQ.

Time/treatment	TG (39)	WLG (35)	MD (TG–WLG)	Significance*	95%CI*
Time 1 (GHQ-12)	Treatment	Control	−1.99	0.534	−1.831, 4.105
	Control	Treatment	1.99	0.534	−4.105, 1.831
Time 2 (GHQ-12)	Treatment	Control	−17.72†	<0.001	−14.483, 1.820
	Control	Treatment	17.72†	0.000	−1.820, 14.483
Time 3 (GHQ-12)	Treatment	Control	−25.96†	0.468	−36.653, −27.364
	Control	Treatment	−25.96†	0.468	27.364, 36.653
Time 1 (PCL-CQ)	Treatment	Control	−1.14†	<0.742	−1.738, −2.336
	Control	Treatment	1.14†	<0.742	2.336, 25.738
Time 2 (PCL-CQ)	Treatment	Control	−25.55†	<0.001	−25.738, −1.325
	Control	Treatment	25.55†	<0.001	1.325, 25.738
Time 3 (GHQ-12)	Treatment	Control	−35.45	<0.001	−25.447, −8.892
	Control	Treatment	35.45†	<0.001	8.892, 25.447
Time 1 (TF-CBT)	Treatment	Control	3.33†	<0.885	−3.963, −4.580
	Control	Treatment	−3.33†	<0.885	4.580, 3.963
Time 2 (TF-CBT)	Treatment	Control	−17.94†	<0.001	−26.44, −1.947
	Control	Treatment	17.94†	<0.001	1.947, 26.445
Time 3 (GHQ-12)	Treatment	Control	−25.08†	<0.001	−29.126, −13.092
	Control	Treatment	25.08†	<0.001	13.092, 29.126

CI = confidence interval, GHQ = general health questionnaire, MD = mean difference, PCL-CQ = post-traumatic stress disorder checklist-civilian version questionnaire, TF-CBT = trauma-focused cognitive behavioral therapy, TG = treatment group, WCG = waitlist group.

* Adjustment for multiple comparisons (Bonferroni–Holm).

† Mean difference is significant at .05 level.

assist students impacted by trauma to overcome possible re-traumatization which may occur after a traumatic event.

The findings on the use of negative coping strategies by trauma-impacted persons are in alignment with Wright et al[72] who noted that negative coping is a predictive factor for the tendency of psychological distress and adverse mental health issues among people experiencing PTSD symptoms. Our findings support Liu et al[62] who established that positive coping strategies such as having a good quality sleep, less incidence of early awakening could reduce the chances of developing PTDS by the people.

Furthermore, the study found that the psychological disorders were more experienced among the participants with low educational qualifications (O' level) as against those who possess MSc and PhD qualifications. However, the study established that all the TG participants demonstrated a high improvement in the PTSD symptoms after the intervention, implying that the TF-CBT intervention impacted positively on them but not on the WCG. These findings laid credence to previous studies.[27,28] The present study also confirmed Umezulike et al[29] who found that TF-CBT demonstrates positive results in improving mental health and reducing symptoms of PTSD on participants who received treatment. Again, the findings of this study agreed with previous studies that TF-CBT is an effective psychological therapy for the treatment of PTSD among adolescents and educational aged people.[19]

Finally, we considered the effect of age on GMH and PTSD of the TG participants and found that though all the participants showed symptoms of COVID-19 trauma, older participants had more tendency of developing adverse GMH and PTSD trauma than the younger ones at the start of the therapeutic intervention. However, the results obtained after the treatment showed no significant improvement difference among the 3 age groups tested. Thus, we inferred that the TF-CBT intervention positively improved mental health and reduced greatly the PTSD symptoms of the participants who received treatment irrespective of their age groups. These findings are in agreement with previous studies that found that traumas caused by traumatic events can be corrected in both youth and adults if they are exposed to TF-CBT intervention.[32,73] The findings of this study also supported Sahin et al[74] and Mihashi et al[75] who found that many people irrespective of their age levels have the tendencies of manifesting PTSD symptoms and adverse psychological problems during the traumatic event (COVID-19).

4.1. Limitations

Although this study demonstrated a positive outcome, there are some limitations to its generalization. One of the limitations is the recruitment of business educators and students only without considering other staff and students from other faculties and departments. Hence, we may wish to suggest that this research topic should be replicated using other faculties and departments staff and students. There is evidence in the literature that small sample size has a low influence on the statistical power and may reduce chances of identifying a reliable effect of a study.[36,37,39] However, the sample size of the educators and students did not influence the power estimate as indicated in Table 4 which showed that the TF-CBT intervention improved the participants in all the groups against their initial traumatized conditions. This supported Winkler and Hays[38] who found that the power of a

statistical test is considered sufficient if the sample size ranges from .80 and above and otherwise if it is from .70 or below.

Another limitation of the study is that sets of questionnaires were used as the dependent measures about the general mental health of the participants, COVID-19 trauma and PTSD symptoms as well as their coping strategies. One of the distinguishing characteristics of the TF-CBT used in the present study is that questionnaire items were factored towards meeting the needs of the educational institutions in Nigeria based on the prevailing COVID-19 outbreak and its consequences on the Nigerian educational system. We believe that the TF-CBT questionnaire can as well be adapted in other countries of the world with similar educational and economic backgrounds to Nigeria.

Finally, psycho-educational information materials on how to stay safe during the lockdown were produced and disseminated to the participants who were also encouraged to share the same with their family members and acquaintances. However, we did not conduct any analysis or follow-up to determine how effective and useful the information was to friends and family members who received it. We, therefore, encourage future researchers to put into consideration these limitations in their research work.

4.2. Practical implications for research

This study established the efficacy of COVID-19 TF-CBT intervention in improving the participants' general mental health and in ameliorating their traumatized experiences due to the COVID-19 event. The outcome of this study places a responsibility on the Nigerian Government, Ministry of Education and educational institutions as well as counselors and Psychological Association of Nigeria to utilize the TF-CBT intervention approach adopted in this study to get staff and students, who have been suffering from shocks and hidden traumas caused by COVID-19 pandemic, ready for the resumption of the full academic session after the COVID-19 lockdown. The COVID-19 shocks and traumas if not effectively checked will negatively affect the productivity of staff and study habits of students as well as their academic performance.[8]

Again, psychologists and clinicians can leverage the benefits of the TF-CBT intervention established in this study. They can organize intervention programmes for the tens, adolescents, youth and families to combat the dysfunctional thoughts and traumas arising from COVID-19. For instance, people were still under the shock of the outbreak of Lasa fever and Ebola diseases when COVID-19 broke out. Clinicians, using the TF-CBT intervention, can help families to learn how to develop emotional balance and positive coping strategies to maintain positive mental health in the face of traumatic events.

5. Conclusion and recommendations

The study found that mental health problems remain serious among business educators and students during the COVID-19 pandemic. This study established that low education qualifications, PTSD symptoms and negative coping strategies were among the factors aggravating the general low mental health of the participants. Educational institutions should therefore take appropriate measures to always adopt TF-CBT interventions to support staff and students' mental health against adverse effects of COVID-19 and future disasters. Again, we advocate that future studies should include other staff and students of other

disciplines in tertiary institutions and other educational levels. Further studies should determine other factors that affect study participants' general mental health and traumatic symptoms.

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