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Effects of rational emotive occupational health coaching on work stress among academic staff of science and social science education in Nigerian universities

A randomised trial evaluation

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Abstract

Background: This study determined the effects of rational emotive occupational health coaching on the management of work stress among academic staff of science and social science education in south east Nigerian universities.

Method: A randomized controlled trial experimental design was adopted for the study with a sample size of 63 participants who were randomized into an intervention group (n = 32) and control group (n = 31). Occupational stress index and perceived stress scale were used for data collection. The intervention program was administered for 12 weeks after which posttest was administered and a 2-month follow-up measure followed. Mixed-design repeated analysis of variance was used to determine the within-groups and between-groups effects.

Results: The findings of the study revealed that there was no significant difference between the baseline, and the nonintervention group did not change over time in their management of work stress. However, the mean stress of the intervention group decreased over time than that of the control group.

Conclusion: Rational emotive occupational health coaching had significant effects on the management of work stress among academic staff of science and social science education.

Abbreviations: OSI = occupational stress index, PSS = perceived stress scale, RCT = randomized controlled trial, REBT = rational emotive behavior therapy, REOHC = rational emotive occupational health coaching, SD = standard deviation SE = south east.

Keywords: academic staff of science and social science education, rational emotive occupational health coaching, work stress

1. Introduction

Academic environment has been characterised by experience of work stress among academics over the years.[1,2] Due to over reliance of academics in higher institutions on technology to attend to students' demands at any time of the day, most of them experience a lot of stress.[3] In line with the above assertion, Poalses and Bezuidenhout[4] found that academics' effort to be effective in the use of technology has been cited as most source of stress in higher education. According to Dewe and Cooper[5] and Onasoga et al,[6] the working condition which is not conducive to the well-being of academics is the major cause of workers' stress. Work environment in Nigeria is so stressful.[7] Nwokeoma et al[8]

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found that 1 of the factors that pose threats to the discharge of duties by Nigerian workers is stress.

According to Workers of America,[9] work stress leads to low productivity, absenteeism, and increased rates of accidents on and off the job. Work stress in academia has been associated with job dissatisfaction, impaired work performance, ill-health, poor psychological well-being, poor interpersonal relationships, reduced employee engagement, and organizational commitment among others.[10,11] Research suggests that academics are exposed to a high level of work stress in Australia and New Zealand,[12] Canada,[13] United Kingdom,[2,14] South Africa,[15,4] and Nigeria.[16–19] Ekpenyong and Inyang[20] reported that 39.25% among a group of workers in Nigeria have work-related disorders. In line with the above submission, Douglas and Nkporbu[7] and Ofoegbu and Nwadiani[21] found that the work environment in Nigeria is too stressful. Besides, Azodo and Ezeja[22] showed that in Nigeria, every 10 respondents showed severe work stress. It is believed that the level of work-related stress among Nigerian workers can be managed if appropriately exposed to counseling therapy such as rational emotive occupational health coaching (REOHC).

According to Onyeshi et al,[23] REOHC is a coaching intervention intended to help workers develop functional skills for coping with workplace stressors. REOHC intervention is delivered under the premise of rational emotive behavior therapy (REBT) either in physical group counseling or using smartphones, WhatsApp chat application, and e-mail.[25] REOHC theorizes that employees' negative cognitive evaluations of workplace climate may inhibit positive emotions thereby limiting enhanced functioning on the job.[24,25] According to Garfield,[26] REBT theory does not maintain that the relationship is itself curative, a positive relationship in REBT psychotherapy is frequent, which in turn is influential in producing positive outcomes in therapy. REBT psychotherapeutic setting is possible to profitably manage personality traits that are usually troublesome.[27] For Blau et al,[28] REBT disputing could help ameliorate the negative behaviors generated by particular adverse personality traits. Thus, the above studies[26–28] suggest that the psychotherapeutic relationship of REBT serves as a protected place for clients.

REBT theory makes use of the ABCDE model in countering irrational beliefs and emotional reactions arising from the individual's relationships with the environment.[23] Ellis[29] opined that people develop irrational beliefs in response to preferential goals being blocked and came up with the ABCDE model. According to Ellis,[29] "A" stands for activating event or adversity that causes the stress, worry, or change in emotion. This could be from something trivial to something significant. "B" stands for a belief system which is the cognitive component in the person's reaction to the events. "C" stands for consequences from an emotional perspective which is often repetitive and can create self-fulfilling prophecies. "D" stands for disputation which challenges the irrational or limit beliefs that are required for mental change to take place. "E" stands for the effect of challenging the self-defeating belief system. Psychologists often call this cognitive restructuring, as new mental patterns and habits are created.

A lot of empirical studies have validated the effectiveness of counseling therapies in the management of work-related stress among workers in different fields of lives. For instance, cognitive restructuring intervention program of rational-emotive behaviour therapy significantly reduced irrational thoughts arising from adverse childhood stress experience.[30] Ogbuanya et al[24] found that rational emotive behaviour coaching led to a significant reduction in occupational stress experienced by the electronics workshop instructors in the REBC group compared to their counterparts in the waitlist control group. Eseadi et al[31] found that at the end of the rational emotive cognitive behaviour coaching intervention there was a significant decline in depression among the participants in the group. Ogbuanya et al[32] found that irrational career beliefs of the participants who were exposed to rational emotive behaviour therapy declined significantly compared to those who were not so exposed. Ezenwaji et al[33] indicated that the group focused of rational emotive behaviour coaching was effective in reducing the level of burnout symptoms among undergraduate students. Nwokeoma et al[8] revealed that REOHC program had a significant effect on work-related stress management among the staff of Nigerian police force when compared to their counterparts in the waiting-list control group. Onyishi et al[23] found that REOHC is effective in managing subjective well-being among police officers and employees who work under chronic stressful conditions.

The foregoing indicated that rational emotive behaviour therapy (REBT) is effective in the reduction of irrational beliefs among workers and students. Among the studies reviewed, only Nwokeoma et al[8] determined the effects of REOHC on management of work-related stress management among the staff of Nigerian police force[8] and subjective well-being of Nigerian police officers and employees who work under chronic stressful conditions.[23] Just like the Nigerian police officers, academic staff of science education in Nigerian universities work under stressful conditions. This by implication indicates that the academic staff will continue to work in their various universities under stressful conditions without knowing how to manage the situation if not exposed to REBT intervention like REOHC. Academic staff of science education in south east (SE) Nigerian universities are saddled with the responsibilities of teaching, marking, invigilating examinations, supervision of undergraduate, postgraduate students' project and thesis, attending professional conferences, and engaging in academic publications among others. There is no doubt that these various responsibilities do not mar the effectiveness of the academic staff in discharging their duties as those responsibilities are sources of stress for them. Thus, university education which is expected to build and prepare students for healthy living in the society seems insufficient or unproductive due to the inability of the academic staff to discharge their responsibilities to the maximum as a result of work stress.[34]

However, none of the studies considered the effectiveness of REOHC in the management of work stress among academic staff in universities in Nigeria. This thus, created a gap in literature in the Nigerian context on whether REOHC can be effective in managing work related stress among the academic staff. The study therefore sought to determine the effects of REOHC on the management of work stress among academic staff of science and social science education in SE Nigerian universities. It was hypothesised that REOHC would lead to a significant reduction of work stress among academic staff of science and social science education.

2. Methods

2.1. Ethical approval

Faculty of Education Ethics Committee on research at the University of Nigeria, Nsukka approved the conduct of this

study. The participants were served with informed consent forms to fill before the commencement of the intervention.

2.2. Design of the study

The randomized controlled trial (RCT) experimental design was adopted. RCT is a study which involves the allocation of people at random to receive 1 of several clinical interventions.[35] One of these interventions is the standard of comparison or control. The control may be a standard practice, a placebo, or no intervention at all. RCT sought to measure and compare the outcomes after the participants receive the interventions. This study design has been used by Nwokeoma et al,[8] Ogbuanya et al,[24,25] Garfield,[26] Ugwuanyi et al,[36,37,40,42] Ede et al,[38] Agboeze et al,[39] Okide et al,[41] Abiogu et al,[43] and Umoke et al[44] to carry out similar studies.

2.3. Participants

A total of 63 academic staff of science and social science education were randomly sampled from the 5 federal universities in SE universities. Academic staff of science and social science education are those lecturers who work in the departments of science and social science education, faculty of education in all the SE Nigerian universities. The aim of the research was advertised through the Academic Staff Union of Universities' WhatsApp groups of the 5 federal universities in the SE region. The participation was made voluntary. Thus, the participants were asked to indicate their interest in participating in the intervention program. At the end of the advertisement period, 123 academic staff of science education volunteered to participate in the intervention program. These participants were screened for eligibility of participation based on eligibility criteria which: must be a confirmed staff of any of the Federal universities in SE Nigeria, must show sign of stress after the baseline measure using occupational stress index (OSI), and must be active in WhatsApp chatting. After checking for eligibility, 63 participants were selected based on the eligibility criteria and formed the participants for the study. G-Power, version 3.1 (Aichach, Bavaria) at medium effect size (f^2) of .15, level of significance of .05, and power of .93 gave an adequate sample size of 63 for this study The power of .93 was considered to be good enough in determining adequate sample size.[45] Other parameters used in determining the sample size were number of groups (2), number of independent variables (2) and number of dependent variables (2). The participants were randomised into intervention (n = 32) and control groups (n = 31). Figure 1 showed the flow diagram of the participants.

2.3.1. Demographic characteristics of the participants. The following demographic characteristics of the participants were considered: gender, age, tribe, university affiliation, and religion as shown in Table 1.

Table 1 shows that there is no significant difference in the number of male and female academic staff of science education who participated in the study, $\chi^2(1) = 1.98$, $P = .072$. However, significant differences exist age, tribe, university, and religion of the participants, $\chi^2(2) = 18.65$, $P < .050$; $\chi^2(2) = 15.98$, $P < .050$; $\chi^2(4) = 21.75$, $P < .050$ and $\chi^2(1) = 19.06$, $P < .050$.

2.4. Measures

2.4.1. Occupational stress index (OSI). OSI developed by Srivastava and Singh[46] was adopted for the study. The OSI is a 46-item scale which assesses the extent of stress employees experience in the context of their life. The response options for OSI are – 5 for absolutely true, 4 for almost true, 3 for partially true, 2 for almost false, and 1 for absolutely false. To estimate the level of worker's occupational stress, the scores on all the statements were added. A score below 115, indicated low occupational stress, scores between 116 and 161, indicated occupational stress is of moderate level, and a score above 161 indicated a highly stressed worker. The internal consistency reliability of the items of OSI is 0.87.

2.4.2. Perceived stress scale (PSS). Perceived stress scale (PSS) developed by Cohen et al[47] was adopted for the study. PSS is a 10-item, a self-reported unidimensional instrument developed to measure perceived stress in response to situations in a person's life. The PSS is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The items of PSS were structured on a 5-point scale of never (0), almost never (1), sometimes (2), fairly often (3), very often (4). The lowest and highest scores obtainable are 0 and 40, respectively. These items ask of worker's feelings, thoughts, and activities about his/her work and home environments. Such items include: in the last month, how often have you been upset because of something that happened unexpectedly? The internal consistency reliability of the items of PSS is 0.67.

2.5. Procedure

Before the commencement of the intervention program, the advertisement was made for the declaration of interest in participation through various ASUU WhatsApp platforms of the various branches of the union in SE Nigeria. Through that channel, 123 academic staff of science and social science education indicated interest in participating in the program. Then the researchers went further to administer the OSI on those who volunteered to participate in the program to assess for eligibility based on the set eligibility criteria. The result of the selection gave rise to 63 participants who meet the inclusion or eligibility criteria. At that point, the PSS was administered on the selected participants to get the second baseline data for the study.

The participants were then randomised into intervention and control groups. Both groups were properly briefed on the objectives of the study and how the program would be carried out. Both the REOHC and normal counseling approach interventions were carried out via WhatsApp online group conferencing. As a means of motivation and to ensure active participation in the program, an arrangement was made to provide data bundles for the participants. The meeting time and day were set to be 5 to 7 PM 2 times in a week, specifically Wednesday and Friday for 12 weeks. During the period, the participants in the intervention group were exposed to REOHC using ABCDE model, while the participants in the nonintervention group were exposed to the normal conventional counseling. The normal conventional counseling administered to the control group served as placebo to that of the intervention group. The intervention program was conducted between February 21, 2020 to May 21, 2020 while the follow-up was conducted on July 21, 2020. At the end of the program, the OSI and PSS were administered on the participants to collect the posttest measure.

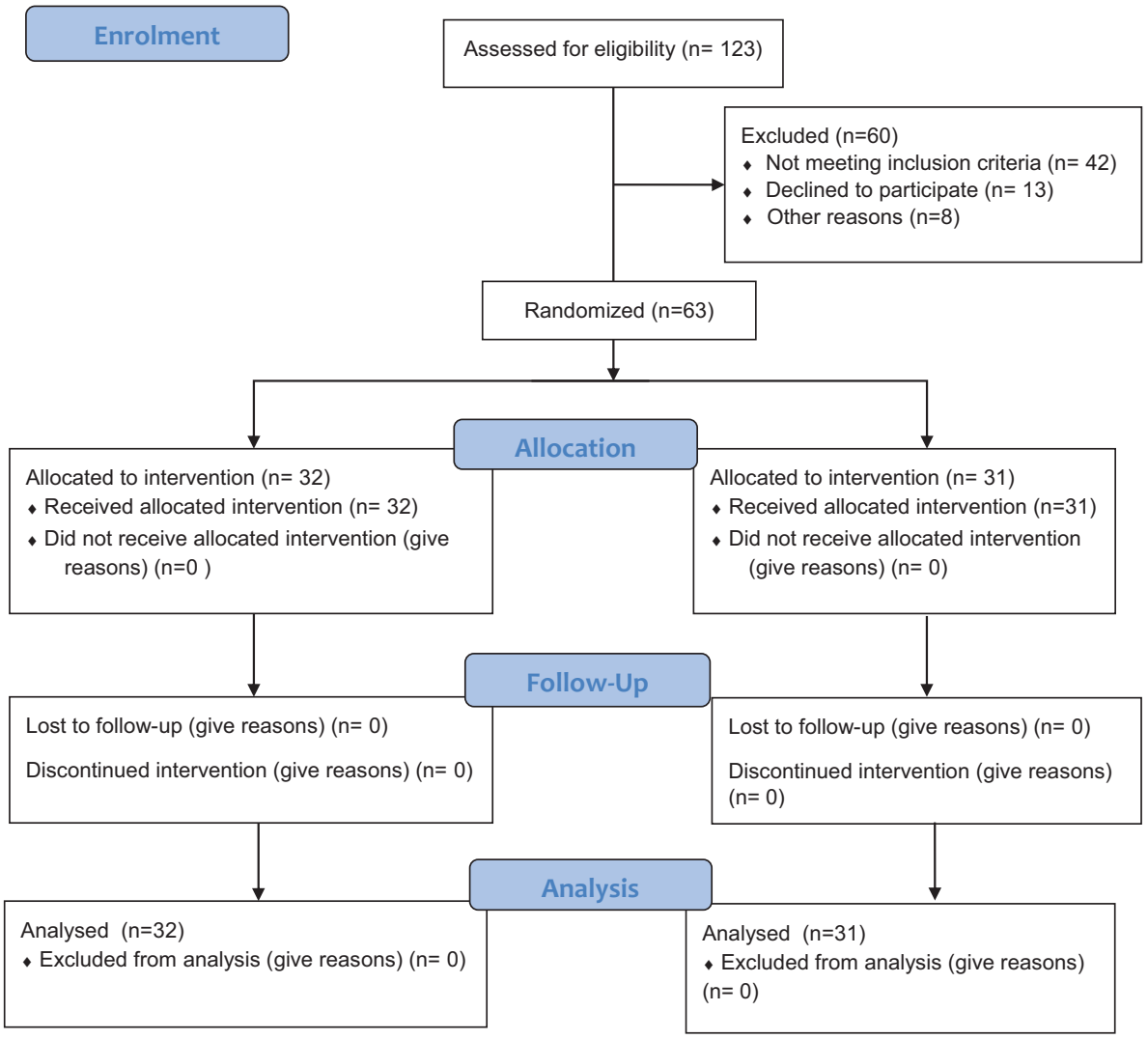

Figure 1. Flow diagram of the sampled participants.

Table 1

Demographic characteristics of the participants.

	Demographics characteristics	Intervention group	Nonintervention group	N (%)	χ^2	*P*
Gender	Male	14	18	32 (50.79)		
	Female	18	13	31 (49.21)	1.98	.072
Age	20 to 25	8	4	12 (19.05)		
	26 to 35	13	13	26 (41.27)	18.65	<.05
	≥36	11	14	25 (39.68)		
Tribe	Igbo	13	15	28 (44.44)		
	Yoruba	9	10	19 (30.16)	15.98	<.05
	Housa	10	6	16 (23.40)		
University	UNN	11	10	21 (33.33)		
	NAUA	8	8	16 (25.40)		
	FUNIAA	3	3	6 (9.52)	21.75	<.05
	FUTO	3	3	6 (9.52)		
	MOUAU	7	7	14 (22.22)		
Religion	Christian	22	22	44 (69.84)		
	Moslem	10	9	19 (30.16)	19.06	<.05

FUNIAA = Federal University Ndufu Ikwo Alike, Abakiliki, FUTO = Federal University of Technology, Owerri, MOUAU = Michael Okpara University of Agriculture, Umudike, NAUA = Nnamdi Azikiwe University, Awka, UNN = University of Nigeria, Nsukka.

Two months after the intervention program, a follow-up measure was obtained using the OSI and PSS to ascertain the level of retention of the effect of the REOHC on the participants. The data obtained at pretest, posttest, and follow-up measures were cleaned and subjected to data analysis.

2.6. Intervention

The intervention manual used for this study was adapted from Onyishi et al[23] and David et al[48] as indicated by Ellis and Grieger.[49] The manual contained the therapeutic strategies for assisting academic staff of science education to become their coach. Cognitive, affective, and emotive techniques, relaxation training, and cognitive training skills were helpful to the researchers in the occupational health coaching intervention for managing participants' work stress.

REBT treatment was focused on the irrational beliefs in which cognitive (ie, disputation), behavioural, and emotive techniques were used to change the target irrational beliefs. The intervention was a 12-week clinical trial of full treatment in which 1 meeting was held twice a week.[48,49] The 12-week treatment period was divided into 3 phases with weeks 1 to 4 as phase 1, weeks 5 to 8 as phase 2 and weeks 9 to 12 as phase 3.

2.6.1. Phase 1: weeks 1 to 4. The first meeting for the first week was used for introduction, familiarisation, and clarification of the aspects of the intervention with the participants. Among the issues discussed in this phase include conceptualization general intervention, building a therapeutical relationship through empathy, carrying out REBT education and intervention expectations, listing of the participants' stress related problems. Moreover, the build of therapeutical relationship started from the first meeting with the participants and the check of its status continues during the whole intervention process.

2.6.2. Phase 2: weeks 5 to 8. Assignments and home works given in the previous sessions were shared and discussed among the participants prior to the commencement of the phase 2 actual activities. This phase aimed at strengthening the participants' rational beliefs and weakening the irrational beliefs. This was done by encouraging the participants to see the links between problems, particularly those which are characterized by common irrational beliefs by de-emphasizing some of the participants' irrational beliefs that are considered as potential stressors. In other words, emphasis was on development of rational self-beliefs that will promote healthy working environment with less stress. Assignments and home works were given to the participants at the end of each section.

2.6.3. Phase 3: weeks 9 to 12. This last phase comprising of 4 weeks was used to prepare the participants for the task of becoming their own future therapist or coach. Prior to that, the assignments and home works given at phase 2 were shared and discussed with the participants. The last part of this phase was used to discuss dependency problems and relapse prevention structure of the first session.

The ABCDE model of REBT has been used by Onyishi et al[23] and Ogbuanya et al[24,25] to carry out similar studies.

2.7. Method of data analysis

The SPSS software version 22 (Chicago, United State of America) was used to conduct the statistical analysis. Data were screened and cleaned by monitoring errors, standardizing the processes, validating accuracy, and scrubbing for duplicate before carrying out the actual data analysis. Statistically, mixed design repeated measures analysis of variance was used to determine the within-groups and between-groups effects. Sphericity is an important assumption of repeated-measures analysis of variance which is the condition where the variances of the differences between all possible pairs of within-subjects conditions are equal. The assumption of the sphericity of the test statistic was tested using Mauchly test of sphericity which was not significant (Mauchly $W=.753$, $P=.376$), implying that the assumption was not violated. Thus, the variances of the differences between all combinations of the related measures are equal. The effect size of the intervention on management of work stress among academic staff of science education was reported using partial eta squared (η_p^2) value. The summary of the methods is shown in Figure 2.

3. Results

Table 2 showed that the mean work stress rating of the participants in the intervention group ($M=174.16$, standard deviation [SD]$=9.70$) was almost the same as that of the participants in the control group as measured by OSI ($M=173.71$, $SD=9.80$). However, at the posttest, the mean work stress rating of the participants in the intervention group ($M=51.75$, $SD=4.91$) was less than that of the control group participants as measured by OSI ($M=138.32$, $SD=19.10$). Similarly, at the follow-up measure, the mean work stress rating of the participants in the intervention group ($M=50.28$, $SD=7.38$) was less than that of the control group participants as measured by OSI ($M=137.16$, $SD=18.24$).

Table 2 also showed that the mean perceived stress rating of the participants in the intervention group ($M=35.13$, $SD=.71$) was almost same as that of the participants in the control group as measured by PSS ($M=35.13$, $SD=0.96$). However, at the posttest, the mean perceived stress rating of the participants in the intervention group ($M=13.06$, $SD=1.11$) was less than that of the control group participants as measured by PSS ($M=24.68$, $SD=7.31$). Also, at the follow-up measure, the mean perceived stress rating of the participants in the intervention group ($M=12.84$, $SD=1.05$) was less that of the control group participants ($M=24.29$, $SD=7.09$). Figure 3 shows the bar chart presentation of the mean stress ratings of the experimental and control groups as measured by OSI and PSS.

Table 3 revealed that there was a significant difference across the 3 time measures, $F(2, 122)=1237.430$, $P=<.050$, $\eta^2=.953$, and significant differences between groups, $F(1, 61) = 597.101$, $P = <.050$, $\eta^2=.907$, in the management of stress among academic staff of science and social science education as measured by OSI. There was also a significant interaction between time and treatment, $F(2, 122) = 371.375$, $P=<.050$, $\eta^2=.859$, as measured by the OSI.

Similarly, as measured by PSS, there was a significant difference across the 3 time measures, $F(2, 122) = 561.563$, $P=<.050$, $\eta^2=.902$, and significant differences between groups, $F(1, 61) = 85.173$, $P=<.050$, $\eta^2=.583$ in the management of stress among academic staff of science and social science education. There was also a significant interaction between time and treatment, $F(2, 122) = 697.478$, $P=<.050$, $\eta^2=.532$.

Following up, this interaction indicated that there was no significant difference between the baseline, and the control group did not change over time in their management of work stress.

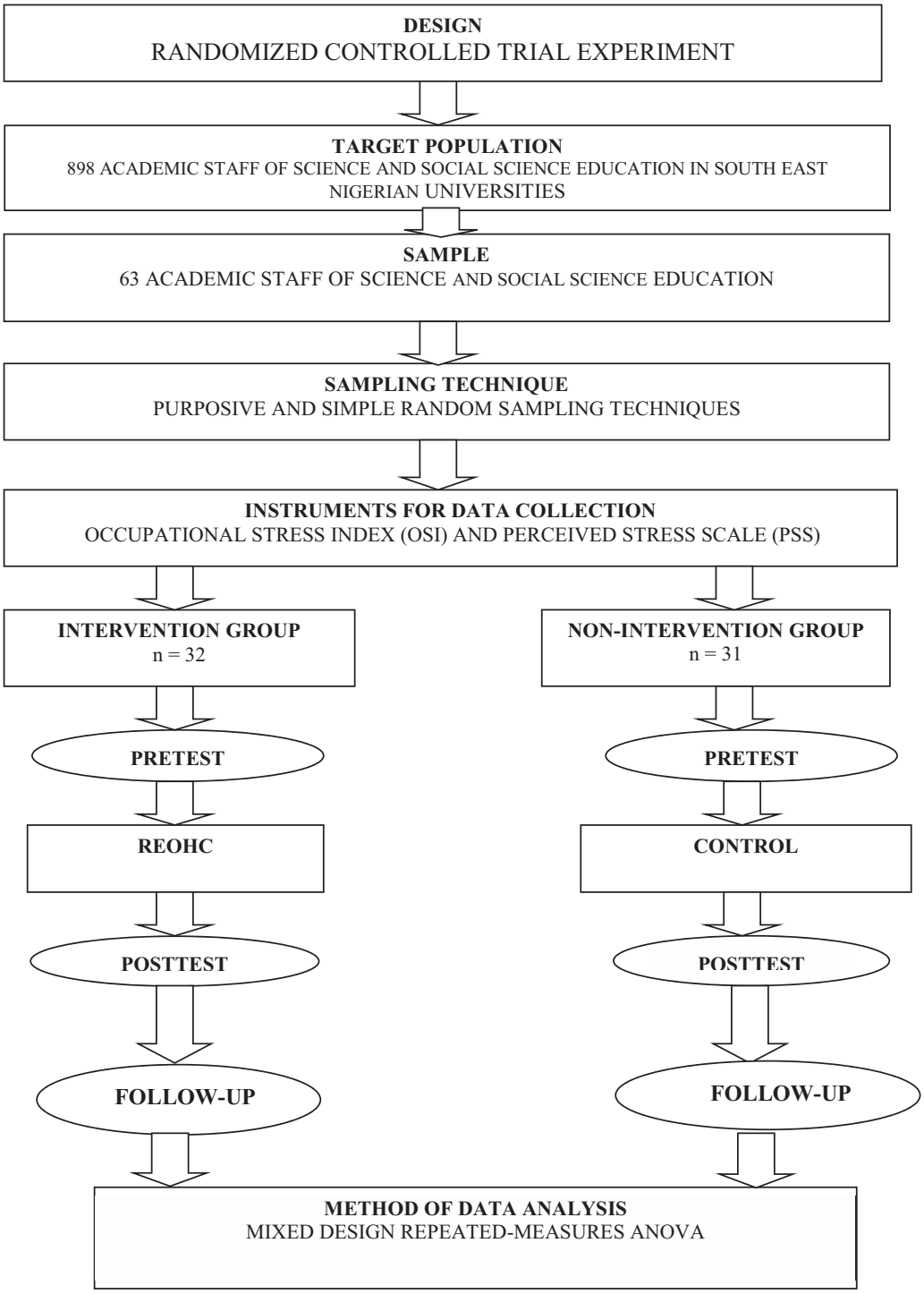

Figure 2. Schematic representation of the research method.

However, the mean stress ratings of the intervention group decreased over time, implying that REOHC had significant effects on the management of work stress among academic staff of science and social science education. Besides, the effect sizes of .907 and .583 indicated that 90.7% and 58.3% reductions in the work stress of the academic staff of science and social science education as measured by OSI and PSS, respectively, can be attributed to the effect of REOHC intervention. Figures 3 and 4 showed the nature of the interaction effect of time and treatment on the management of stress among academic staff of science and social science education as measured by OSI and PSS.

As measured by OSI, Table 4 showed that the mean differences for the various pairs of measures are significant at $P < .050$ except for the mean differences between measures 2 and 3, 3 and 2 with $P > .050$. However, as measured by PSS, the mean difference for

Table 2

Mean analysis of the work stress ratings of the intervention and control groups at 3 different times.

			Pretest (1)		Posttest (2)		Follow-up (3)	
Treatment	**Measure**	**n**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Intervention	OSI	32	174.16	9.70	51.75	4.91	50.28	7.38
Control		31	173.71	9.80	138.32	19.10	137.16	18.24
Intervention	PSS	32	35.13	.71	13.06	1.11	12.84	1.05
Control		31	35.13	.96	24.68	7.31	24.29	7.09

OSI = occupational stress index, PSS = perceived stress scale, SD = standard deviation.

all the pairs of measures are significant at $P < .050$. The interaction plots of time and treatment are as shown in Figures 4 and 5.

4. Discussion of the findings

This study sought the effects of rational-emotive occupational health coaching on the management of work stress among academic staff of science and social science education in SE Nigerian universities. The findings of the study revealed that there was no significant difference between the baseline, and the control group did not change over time in their management of work stress. However, the mean stress ratings of the intervention group decreased over time implying that REOHC had significant effects on the management of work stress among academic staff of science and social science education. These findings go to explain the engaging nature of the REOHC intervention program. The intervention program has the inherent ability to change client's irrational thoughts or believes to rational ones and that has been empirically proven by this research. The study findings validated the argument of the REBT that irrational beliefs result in maladaptive emotions leading to reduced well-being.[23] In other words, REBT can be used by therapists to widen workers' insight into work experiences and emotional reactions in psychological adaptations to job experiences. Mehrnaz[50] and Sanjuán et al[51] found that cognitive behavioral therapy is effective in increasing life satisfaction and positive affect and lowers the negative affect of subjects. David[52,53] and Neenan[53] indicated that coaching enhances stress resilience and performance. Buttressing the above points are the findings of Nwokeoma et al,[8] Onyishi et al,[23] Ogbuanya et al,[24,25,32] Eseadi et al,[30,31] and Ezenwaji et al.[33]

According to Eseadi et al,[30] cognitive restructuring intervention program of rational-emotive behavior therapy significantly reduced irrational thoughts arising from adverse childhood stress experience. Ogbuanya et al[24] found that REOH therapy significantly enhanced electronics technology employees' perceptions of organizational climate and occupational risk management practices in Nigeria. Ogbuanya et al[25] also found that rational emotive behavior coaching has a significant reduction in occupational stress and improvement in the work ability of electronics workshop instructors in Nigeria. Eseadi et al[31] found that at the end of the rational emotive cognitive behaviour coaching intervention there was a significant decline in depression among the participants in the group. Onuigbo et al[54] found that REBT approach is effective in managing stress at workplace.

Ogbuanya et al[32] found that irrational career beliefs of the participants who were exposed to rational emotive behaviour therapy declined significantly compared to those who were not so

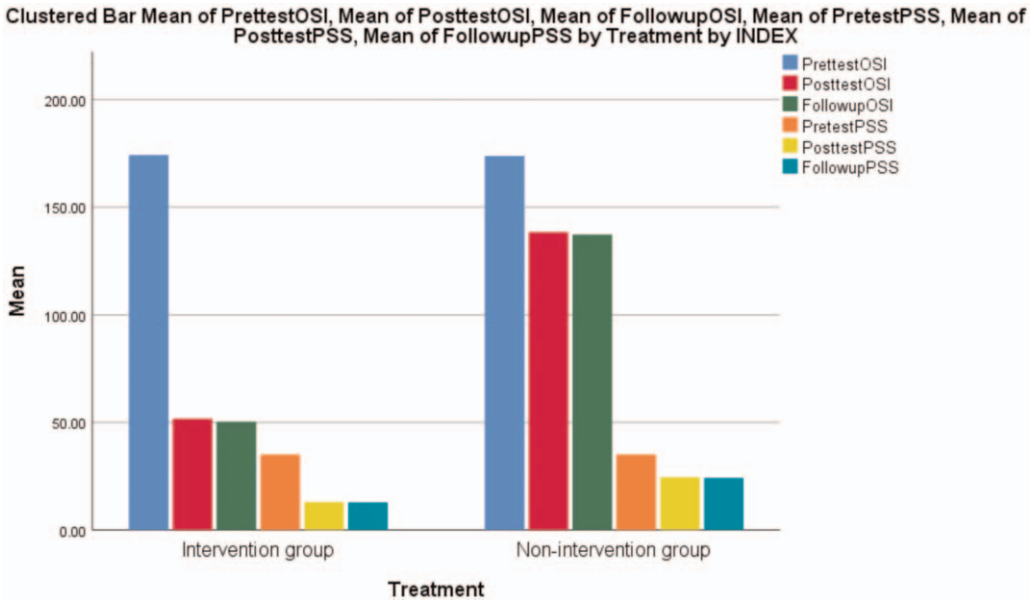

Figure 3. Bar chart showing the mean stress ratings of the intervention and control groups. OSI = occupational stress index, PSS = perceived stress scale.

Table 3

Mixed design repeated measures analysis of variance for the tests of within-subjects effect and between-subjects effects of the intervention.

Measure	Source		Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared
Tests of within-subjects effect								
OSI	Time	Sphericity assumed	265,799.947	2	132,899.973	1237.430	.000	.953
	Time* treatment	Sphericity assumed	79,771.312	2	39,885.656	371.375	.000	.859
	Error (time)	Sphericity assumed	13,102.804	122	107.400			
PSS	Time	Sphericity assumed	11,308.098	2	5654.049	561.563	.000	.902
	Time* treatment	Sphericity assumed	1394.955	2	697.478	69.274	.000	.532
	Error (time)	Sphericity assumed	1228.346	122	10.068			
Tests of between-subjects effect								
OSI	Intercept		2,761,736.741	1	2,761,736.741	10,496.819	.000	.994
	Treatment		157,098.646	1	157,098.646	597.101	.000	.907
	Error		16,049.238	61	263.102			
PSS	Intercept		110,548.393	1	110,548.393	3371.907	.000	.982
	Treatment		2792.393	1	2792.393	85.173	.000	.583
	Error		1999.893	61	32.785			

η^2 = effect size, OSI = occupational stress index, PSS = perceived stress scale.

exposed. William[35] indicated that group focused rational emotive behaviour coaching was effective in reducing the level of burnout symptoms among the undergraduate students. Nwokeoma et al[8] revealed that REOHC program had a significant effect on work-related stress management among the staff of Nigerian police force when compared to their counterparts in the waiting-list control group. Onyishi et al[23] found that REOHC is effective in managing subjective well-being among police officers and employees who work under chronic stressful conditions. The findings of this study have implication on the work efficiency of the academic staff of science education. This by implication indicates that the academic staff will continue to work in their various universities under stressful conditions without knowing how to manage the situation in the absence of REOHC intervention program. According to Du Plessis,[3] academics in open distance learning institutes and universities rely heavily on technology to remain employable and attend to students' demands at any time of the day. Consequently, the effort to keep up with information technology is one of the most cited stressors in higher education.[4] Thus, adequate use of the intervention program in the various SE Nigerian universities from time to time to counsel the academic staff will help them to increase their work output with less stress.

4.1. Limitations of the study

The generalizability of the findings of this study may be limited due to obstructions in the flow of the intervention contents as a result of poor browsing network during the intervention period. Besides, the researchers could not analyze potential moderating effects of gender, tribe, age, and religion on the impact of CBT on work stress of the participants. Thus, the researchers suggested that future researchers can replicate the study through face-to-face contact and also factor in the moderating effect of any of the

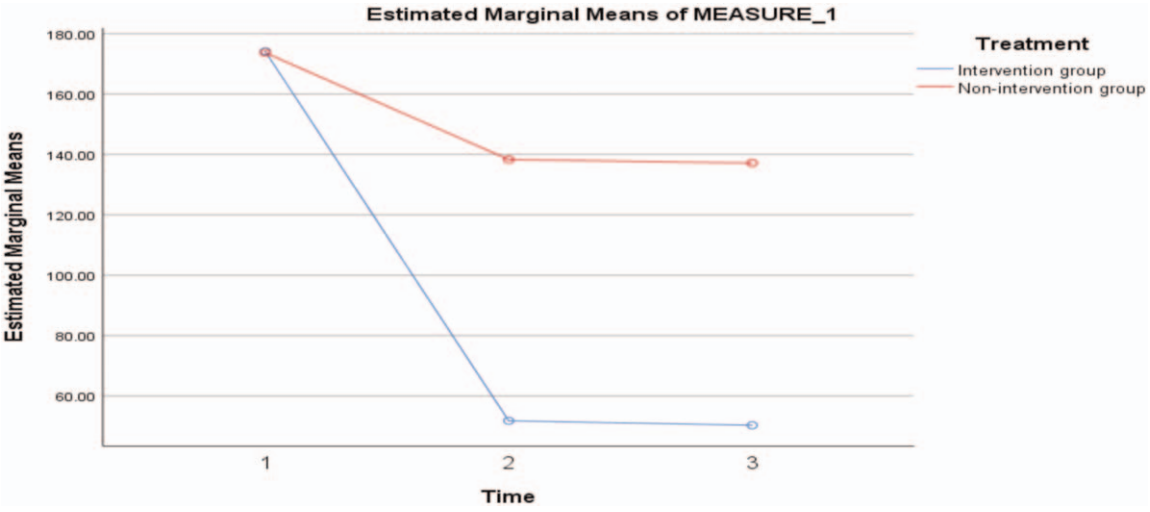

Figure 4. Interaction graph of time and treatment as measured by OSI. OSI = occupational stress index.

Table 4

Post hoc pairwise comparisons for the significant difference across the 3 times.

Measure	(I) Time	(J) Time	Mean difference (I–J)	Std. error	Sig.	95% Confidence interval for difference Lower bound	Upper bound
OSI	1	2	78.897*	2.181	.000	74.535	83.259
		3	80.212*	2.238	.000	75.737	84.686
	2	1	−78.897*	2.181	.000	−83.259	−74.535
		3	1.315	.683	.059	−.051	2.681
	3	1	−80.212*	2.238	.000	−84.686	−75.737
		2	−1.315	.683	.059	−2.681	.051
PSS	1	2	16.257*	.696	.000	14.865	17.649
		3	16.560*	.676	.000	15.208	17.912
	2	1	−16.257*	.696	.000	−17.649	−14.865
		3	.303*	.132	.025	.039	.567
	3	1	−16.560*	.676	.000	−17.912	−15.208
		2	−.303*	.132	.025	−.567	−.039

OSI = occupational stress index, PSS = perceived stress scale.

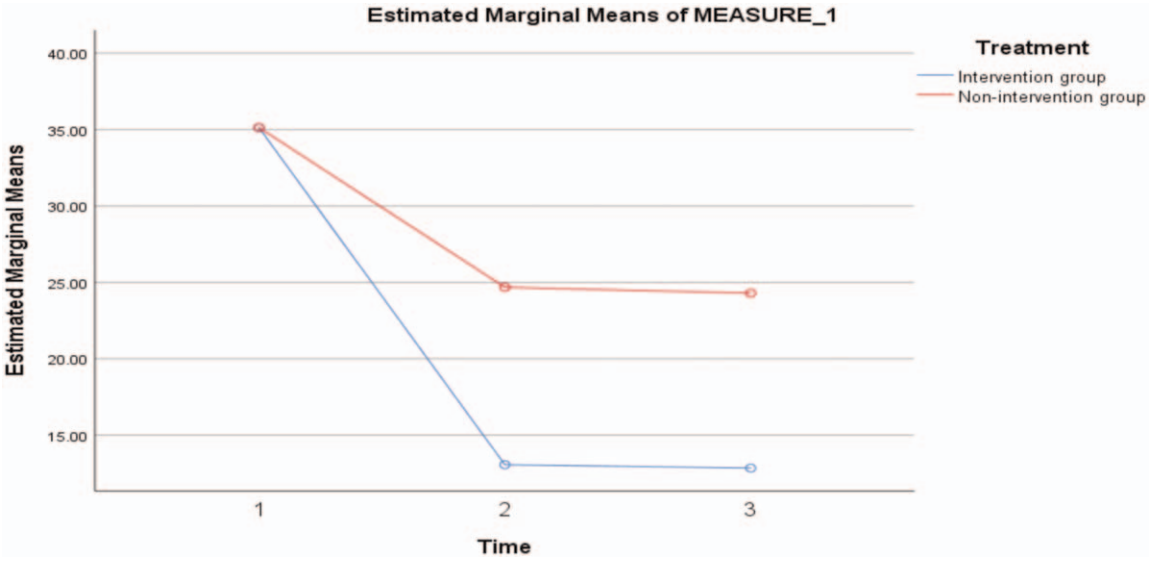

Figure 5. Interaction graph of time and treatment as measured by PSS. PSS = perceived stress scale.

potential moderators on the impact of CBT on work stress of the participants.

4.2. Conclusion and strength of the study

This study has shown that REOHC is very effective in the management of work stress among academic staff of science and social science education in SE Nigerian universities. This has contributed to the existing body of knowledge in the area of science and social science education in that it is the first research output that proved the effectiveness of REOHC in the management of work stress among university academic staff of science and social science education in SE region of Nigeria. Before this research output, there has been no existing empirical evidence on the subject matter. Based on the findings of the study, the researchers recommended that seminar and workshops should be organized by the relevant university authorities for the academic staff of science and social science education to be counselled using REOHC intervention program. This seminar or workshop should be organised from time to time to enable the academic staff of science and social science education to cope with the challenges of their work demands.

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