

Yoga complemented cognitive behavioral therapy on job burnout among teachers of children with autism spectrum disorders

Ibiwari C. Dike, PhD^a, Charity N. Onyishi, PhD^{a,b}, Dorothy E. Adimora, PhD^a, Christiana A. Ugodulunwa, PhD^c, Grace N. Adama, PhD^a, Gloria C. Ugwu, PhD^a, Uchenna N. Eze, PhD^a, Angela Eze, PhD^c, Francisca N. Ogba, PhD^c, Patience E. Obiwluozo, PhD^{a,*}, JaneFrances C. Onu, MD^d, Augustine O. Onu, PhD^e, Zipporah O. Omenma, MED^f, Vivian C. Nwaeze, MD^d, Casimir Ani, PhD^g, Christopher N. Ngwu, PhD^h, Uchenna E. Uzodinma, PhD^a, Felicia U. Iremeka, PhD^a

Abstract

Background/objective: Job burnout is a syndrome of reaction to chronic job-related stress which affects overall health, limits occupational efficacy, and personal accomplishments of employees thereby thwarting organizational outcomes. Burnout symptoms are common among teachers of children with autism spectrum disorders (ASD) and affect the academic progress of the children. This study investigated the effectiveness of Yoga-based cognitive behavioral therapy (Y-CBT) in reducing occupational burnout among teachers of children with autism in Lagos States, Nigeria.

Methods: A group-randomized control-trial with immediate intervention and waitlist control groups was design was adopted. Participants included 58 teachers of children with autism in public and private special schools in the area. Participants were randomly assigned to Y-CBT (N = 29) and waitlist control (N = 29) groups. The Y-CBT group participated in a 2 hours Y-CBT program weekly for 12 weeks. Three instruments Demographic variable, Single Item Stress Questionnaire (SISQ), and Maslach Burnout Inventory-Educators' Survey (MBI-ES) were used to collect data. Data were collected at baseline; post-test and follow-up evaluations. Data were analyzed using means, standard deviations, *t* test statistics, repeated measures analysis of variance, and bar charts.

Results: Results revealed that job-burnout reduced significantly at post-test assessment among the Y-CBT group compared to the waitlisted group. The reduction in the participant was sustained across 3months follow-up evaluation.

Conclusion: It was concluded that Y-CBT modalities could help to reduce the burnout symptoms among teachers of children with ASD.

Abbreviations: ABCDE = activating event, beliefs, consequences, disputation, and effective world view, ASD = autism spectrum disorders, CBT = cognitive behavioral therapy, CI = confidence interval, MBI-ES = Maslach Burnout Inventory-Educators' Survey, SISQ = single-item stress questionnaire, WLG = waitlist group, Y-CBT = combined CBT and yoga.

Keywords: cognitive behavioral therapy, yoga, job-burnout, health, well-being

1. Introduction

Elevated occupational stress can result in significant personality, physical and mental health disturbances, with impending negative socio-economic implications for employees and their

organizations. About 88% of teachers worldwide are affected by chronic stress associated with the workplace,^[1,2] leading to some forms of continual exhaustion disorder called burnout.^[3] In Nigeria, high level of occupational stress has been recorded

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^a Department of Educational Foundations, University of Nigeria, Nsukka, Nigeria, ^b Department of Educational Psychology, University of Johannesburg, South-Africa,

^c Department of Educational Foundations, Alex Ekwueme Federal University, Ndufu Alike Ikwo Ebonyi State, ^d School of General Studies, University of Nigeria,

^e Department of Sociology and Anthropology, University of Nigeria, ^f Department of Social Science Education, University of Nigeria, ^g Department of Philosophy, University of Nigeria, ^h Department of Social Work, University of Nigeria, Nsukka, Nigeria.

* Correspondence: Patience E. Obiwluozo, Department of Educational Foundations, University of Nigeria, Nsukka, Nigeria (e-mail: patience.obiwluozo@unn.edu.ng).

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across teachers at all level of education and contexts.^[4,5-7] Those teaching children with special education needs are more susceptible to the dehumanizing effect of burnout.^[8,9,10] Burnout has been defined as a psychological reaction to chronic work-stress.^[11] It is a long-term effect of exhaustion of coping resources for stress management.^[12] Burnout is symptomized in emotional tiredness, cognitive fatigue, and chronic bodily weakness or physical fatigability.^[3] It is a multi-dimensional psychological condition, characterized by 3 components, vis: emotional exhaustion (EE) (a feeling of depletion of emotional resources), depersonalization (DEP) (a negative, cynical, or excessive detachment), and reduced personal/professional accomplishment (a subjective negative evaluation of oneself about job efficacy).^[11,13,14] Teachers' burnout results in low morale, reduced effectiveness, high levels of absenteeism, reduced commitment to the profession and job turn over. Burnout also accounts for axis-1 disorders, including anxiety, depression, sleep disorders, lack of happiness, and substance use disorders, as well as generally thwarted quality of life.^[15-18] Burnout affects both the physical and mental health of the teachers.^[19,20] The escalating effects of burnout are accountable for over 20% of referrals to health centers.^[21] Burnout has been found as a common psychological problem among teachers in Nigeria.^[22-24]

Teachers who are overwhelmed by burnout encounter repeated emotional exhaustion, depersonalization, and feeling of lack of accomplishments.^[25,26] Teachers of children with autism spectrum disorders (ASD) are more likely to be burned out compared to teachers of the typically developing children, or children with other disabilities.^[19,27-30] This could be due to work demands associated with the impairments in the children they teach.^[31,32] For instance teachers of children with ASD are required to carry out extra assignments such as adapting curriculum materials, and environment to suit the children.^[33,34] Furthermore, teachers' lack of training/skills and poor self-efficacy for teaching the children.^[19] are additional sources of stress, leading to burnout.

Additionally, autism conditions are characterized by social and behavioral difficulties that threaten teachers' sense of efficacy leading to a feeling of burnout.^[19,35,36] Further, due to heterogeneity of ASD, teachers who teach children with the disorders find it difficult to meet the needs of all the children, thereby experiencing a high level of burnout.^[19,35,37] Offering individualized Education Programs (IIP) adds to teachers' stress.^[27,30] In the Nigerian context, poor knowledge of the teachers on ASD may increase their susceptibility to burnout.^[38] Given the long-term negative effects of burnout, it is without doubts that reduction in teachers' burnout will increase teachers' performance in satisfactorily meeting the special needs of the children they teach.^[39] promote better social relationships.^[40] and reduce sick leave and absenteeism.^[41]

This study used a combination of cognitive behavioral therapy (CBT) and Yoga in the form of stress management to reduce burnout symptoms among teachers of children with ASD. Cognitive behavioral therapy (CBT) is a psychotherapeutic treatment found to be effective in modifying everyday behavior. The core premise of CBT intervention approach as reported by Hofmann^[42] is dealing with maladaptive cognitions which include general belief or schemas that give rise to specific and automatic thoughts in a person in a particular situation. Ali et al^[43] affirmed that CBT aims to positively influence emotion by changing the maladaptive cognitions that fans the embers of emotional distresses which leads to burnout. CBT is based on changing negative

thinking patterns and distorted beliefs that bring about irrational emotions by learning to reorganize the cause and re-evaluate them in light of reality.^[44] CBT commonly involves keeping a diary of significant events and associated feelings, thoughts and behaviors, questioning and testing assumptions or habits of thoughts that might be unhelpful and unrealistic; gradually facing activities that would have been discarded to try new ways of behaviors that are based on helpful reality.

The theory of CBT emphasizes the activating event, beliefs, consequences, disputation, and effective world view (ABCDE) model.^[45,46] This model holds that certain critical incidents or situations:

1. activate schema, or internalized thought patterns
2. which could be adaptive or maladaptive. When this occurs, it is the maladaptive cognition, not the event that will lead an individual to experience negative emotional distress
3. which reduces the individual's capacity of functioning. CBT addresses this by helping the individual to identify and dispute
4. misconceptions and unhelpful beliefs about the event and develop new conceptions about the situation
5. hence, developing new behavioral responses to stressful invents.^[47]

CBT uses some specific techniques like disputation, cognitive restructuring, problem-solving, relaxation, and homework assignment, these techniques can be used to identify irrational thoughts and replace them with rational thoughts and to develop and practice new cognitive, emotional and behavioral scripts for responding to stressors.^[48,49] The ABCDE model of CBT has been widely used across disciplines, to help individuals with health challenges associated with cognitions. There are convincing evidence-base studies for the effectiveness of CBT in the treatment of mental illnesses such as burnout.^[14,11] Extant studies have attested to the efficacy of CBT in promoting the quality of life of individuals with psychiatric disorders, even with very high rates of co-morbidity.^[50,51,52] CBT is a structured time and cost-effective therapeutic approach to current problems.^[53,54] Despite the efficacy of CBT so far, it is recommended to use psychotherapy like CBT in conjunction with Yoga in the treatment of psychosomatic symptoms of mental health issues, such as burnout.^[55]

Yoga is an alternative and complementary treatment used in reducing psychosomatic challenges including burnout. Maddux, Daukantaite, and Tellhad^[56] explained yoga as a form of exercise that integrates the mind, spirit, and body to promote the wellbeing of individuals. Historically, yoga is an ancient Indian practice focusing on physical and breathing exercises that combines relation, mediation, and physical workout.^[57,58] Yoga is a therapeutic approach that brings in concert bodily and psychological that could assist 1 to attain physical and mental peacefulness. Yoga is intended to increment the conservative treatments for clients with an assortment of mental health disarray, by linking physical and mental exercises.^[59,60,61]

There are different types of yoga one of which is Hatha yoga, which is recommended for stress management. Hatha is one of the most commonly used yoga styles for beginners. It utilizes specific techniques, such as poses, breathing, meditation, and relaxation. Yoga philosophy as evinced by Woodard^[62] is based on 8 limbs that referred to as ethical principles for meaningful and purposeful living. Maths, and Srinivasraju^[63] in their study report that yoga is a good technique that relax the body and calm the mind. Hence, yoga can help reduce burnout symptoms. Experiments have shown yoga to be as effective as a drug when it

comes to psychosomatic disorders^[64] exemplified in burnout. Eskandar and Sasan^[65] reported that yoga practice is an invaluable technique for managing stress-related illnesses such as anxiety, depression, and burnout.^[57,65,66]

Yoga has also been found to help to improve psychological health factors such as worry and rumination that impact on physical health.^[67] It also impacts positively on body image and mood.^[43,68] and can create balance for physical, emotional, mental and spiritual capacities and reduce the risk of cardiovascular diseases.^[69,70] Further, Yoga techniques impacts on metabolic syndrome.^[71] and associated musculoskeletal disorders.^[72,73] Yoga is used as both a complementary therapy and a separate treatment.^[55,59–61] In this study, we adopted a complementary approach to combine yoga with cognitive behavioral therapy (CBT) in minimizing burnout in teachers of children with ASD.

Some researchers differ in their opinion of using CBT as 1 single technique in the treatment of psychosomatic disorders such as burnout.^[55] Murphy^[74] reported that though CBT skills are effective for psychological outcomes, muscle relaxation, and mind-body techniques could complement CBT for more effective and positive outcomes.^[55,56,75] Thus using yoga to complement the CBT intervention for burnout could maximize the effectiveness of intervention by taking care of both mental and somatic aspects of symptoms. Shreds of evidence abound affirming the invaluable benefits of complimenting CBT with Yoga (Y-CBT) for heightened outcomes.^[61,76–81] Khalsa, and colleagues^[61] used Y-CBT intervention, in improving state and trait anxiety, depression, panic, sleep, and quality of life, and found significant improvement across the symptoms. Branes, et al,^[77] also found Y-CBT effective in treating worry in anxious older adults. However, no study has used Y-CBT in the treatment of burnout among teachers of children with ASD in Nigeria. Furthermore, earlier study has noted the close relationship between burnout and axis-1 disorders, and called for a holistic approach in management of burnout and axis-disorders symptoms such as generalized anxiety disorders.

The current study fills the knowledge gap by using Y-CBT to help this group of teachers of children with ASD in attempt to ascertain the effectiveness. We, therefore, hypothesize that by the completion of the Y-CBT intervention program, the job-burnout of the participants would reduce significantly over the baseline assessment and that this reduction would be sustained across 3 months follow-up.

2. Methods

2.1. Design

The current study adopted a group-randomized waitlist control trial design with pretest, post-test, and follow-up assessments.^[82] This design guided the researcher to assess the effectiveness of Y-CBT intervention on job-burnout of participants. Participants were randomized into Y-CBT and wait-list control groups.

Ethical consideration: We obtained from the Faculty of Educational research ethics committee, University of Nigeria, Nsukka, Nigeria. The study also complied with the research ethical standard as specified by the American Psychological Association^[83] and the World Medical Association.^[84] All the study participants signed written consent before participating in the study. This study was also registered in the AEA RCT Registry and the unique identifying number is: “AEARCTR-

0005532.” In a case where a participant developed syndrome illnesses, such were withdrawn from continuing participating.

3. Measures

3.1. Demographic questionnaire

This was meant to obtain information about the participants' demographic variables including age, gender, years of experience, and qualification. The participants were instructed to tick the appropriate option as it may apply to him or her.

3.2. The single item stress questionnaire (SISQ)

This single-item measure of stress symptoms was used as one of the inclusion/exclusion criteria for the study. This instrument was found useful to the study due to the close link between stress and burnout.^[19,27–30] The instrument has consistently been found valid and reliable^[85,86] showing Chronbach reliability indices ranging from 0.80 to 0.86. The instrument reads: “stress means a situation when a person feels tense, restless, nervous, anxious or unable to sleep at night because his or her mind is troubled all the time. Do you feel that kind of stress these days?” The SISQ is measured I 5-point scale ranging from 1-“not at all” to 5-“very much.” In this study, scores ranging from 1 to 2 indicate low stress; 3 indicate moderate stress; while 4 to 5 indicate a high-stress level. The researcher found a Chronbach Alpha reliability index of 0.79 among 20 adult workers in Nigeria for SISQ.

Maslach Burnout Inventory-Educators' survey (MBI-ES): the MBI-ES developed by Maslach and Jackson^[87] was used to measure teachers' burnout in this study. The items in MBI-ES cover 3 burnout dimensions: exhaustion, cynicism/depersonalization, and poor professional efficacy. MBI-ES is a 22-items questionnaire designed for teachers, administrators, other staff members, and volunteers working in any educational setting. All items were measured on a 7-point scale: 0=“never”; 1=“a few times a year or less”; 2=“once a month or less”; 3=“a few times a month”; 4=“once a week,” 5=“a few times a week” and 6=“every day”. In scoring and coding the data, exhaustion and depersonalization subscales were scored normally as stated above, while the professional efficacy subscale scores were reversed (i.e., “never”=6; “a few times a year or less”=5; “once a month or less”=4; “a few times a month”=3; “once a week”=2 “a few times a week”=1; and “every day”=0). MBI has been widely used in burnout research across the world. The inventory is of high psychometric quality.^[88] The MBI-ES was revalidated to contextualize the usability in the Nigerian context before using it to collect data for this study. The inventory was used as it is since it did give a satisfactory reliability index in 65 teachers in Nigeria ($\alpha=.88$).

3.3. Participants and procedure

A total of 58 teachers who teach children with autism male (n=16) and female (n=42). For more demographic information of the participants see Table 1. All the 67 potential participants who responded to the invitation to participate in the study were screened for eligibility against inclusion criteria set by the researchers. Participants were included based on the inclusion criteria:

1. the participant must score up to 3 to 5 in the single-item measure of stress symptoms, showing moderate to high-stress level;

Table 1
Summary of the Y-CBT intervention program.

Week/Sessions	Activities	Psychological mechanisms	
Wk1	Introduction and baseline testing	Establishing an alliance with the participants. Setting confidentiality rules. Collection of baseline data on the job-burnout of the participants. Establish a working atmosphere with the participants. Collaborating with the participants to set intervention goals. Discussing the expectations of the intervention; discussing the therapist's and participants' responsibilities during coaching and basic rules of the CBT intervention.	Assessments, goal-setting familiarization, setting rules
2	Creating a problem list/Introduction of Y-CBT	Guiding the participants to create a problem list with regards to occupational challenges associated with burnout. The module is designed to help participants approach each of the problems by explaining them using the ADCDE framework. Use the CBT model to explain stressors and the associated burnout. Lead participants to understand the CBT and Yoga and how they can work together to complement each other in managing burnout. Explaining the yoga exercises that will be used in the study.	Problem formulation/identification, discussion, clarification
Wk 3	Intervention 1	Help participants to identify and refute unhelpful beliefs and orientations about their job which constitute burnout. This was done by listing irrational beliefs that follow unfavorable experiences and encouraging rational beliefs and thoughts. Coaching was also geared toward reducing burnout. Techniques described in the intervention program were strictly adhered to. The yoga exercise session was taken for 40 minutes after the CBT session as stated in the intervention program. Participants were given a homework assignment after each session. Participants were also encouraged to have snapshots of their yoga practices	Disputation; homework tasks, Problem-solving. Rational coping statements; Unconditional self-acceptance, Ananas.
4–5	Intervention 2 and 3	Intervention continued. Checking and discussing the completed homework assignment and yoga photos. The Therapists and the participants shared weekly experiences at the onset of each session. Further disputation of irrational belief associated with job experience and replacing them with rational ones using the ABCDE modalities and techniques. Emphases were laid in developing rational self-beliefs, rational thoughts, and practices in their jobs. Linking job stressors with associated irrational beliefs. Leading the participant to find out how the belief system affects their emotions and then weakening negative effect associated occupation. Concludes each session with a 40minutes Yoga practice. Homework assignments were given to the participants after each session.	Consequence analysis; Disputation; homework tasks, discussion, cognitive- restructuring
6–7	Intervention phase 4 and 5	Further application of CBT modalities and techniques that would develop in the participants the skills for self-monitoring. Discussing healthy practices and risk management approaches in and outside the workplace. Coaching on other traditional Yoga practices that could keep the participants' healthy and effective in the workplace. Toward developing the habit of functional health practices and positive psychology in the workplace. Time management skills were also discussed and practiced. Assignments were given at the end of each session. 40minutes of Yoga practices ended the session.	Guided imagery; rationalizing techniques; reframing; Relaxation technique; hypnosis
8–9	Intervention phase 6 and 7	Further helping the participant develop the skills for burnout reduction and healthy thoughts as well as yoga exercises (posture, breathing, and meditation exercises). Towards developing problem-solving, rational thinking, and stress management skills necessary for maintaining a healthy relationship job.	Homework assignments; decision making; Physical exercise
10–11	Intervention phase	Encouraging the participant to highlight what they have gained from the program and how they are going to apply them in the future. Discussing other related personal issues and experiences associated with keeping healthy in the workplace and the gain associated. Evaluation of individual commitments during the program based on contribution to group discussions and completion of assignments.	Meditation; humor and irony; decision-making; conflict resolution
12	Conclusion and Revision	Participants were encouraged to ask their questions and clarify personal experiences and life situations. Share useful gains in skills. Practice Yoga exercises.	Self-evaluation, demonstrating new skills.
14th Wk	Posttest evaluation	Conduction post-test measurement.	Testing
3mo	Follow-up assessment	Conducting the follow-up after three mo of posttest	Testing

- the teacher must have been employed in a Special Education school for not less than 1 years;
- participant must possess personal smartphones with a functional email address and connected to WhatsApp;
- participant is willing to submit personal contacts and phone numbers;
- teacher signed a written consent that he/she will be available for 2 hours a day in a week for the intensive intervention face-to-face and online modules;

- participant has not been diagnosed of any major psychological disorders, such as depression or anxiety disorders;
- participant is not having any chronic medical cases or terminal illnesses.

Volunteers who did not meet the criteria were excluded from the research.

At the first stage of the sampling (March 2019–April 2019), the researchers with 4 trained research assistants visited 15 public

and private Special Education schools in Lagos State Nigeria to notify them of the intervention program. At each visit, they explained burnout associated with work and how it can affect the health of the workers. Also, the Y-CBT program and how it can be beneficial to them in their work and well-being were explained. Thereafter, the teachers were invited to the screening exercise. A total of 67 teachers volunteered to participate in the program.

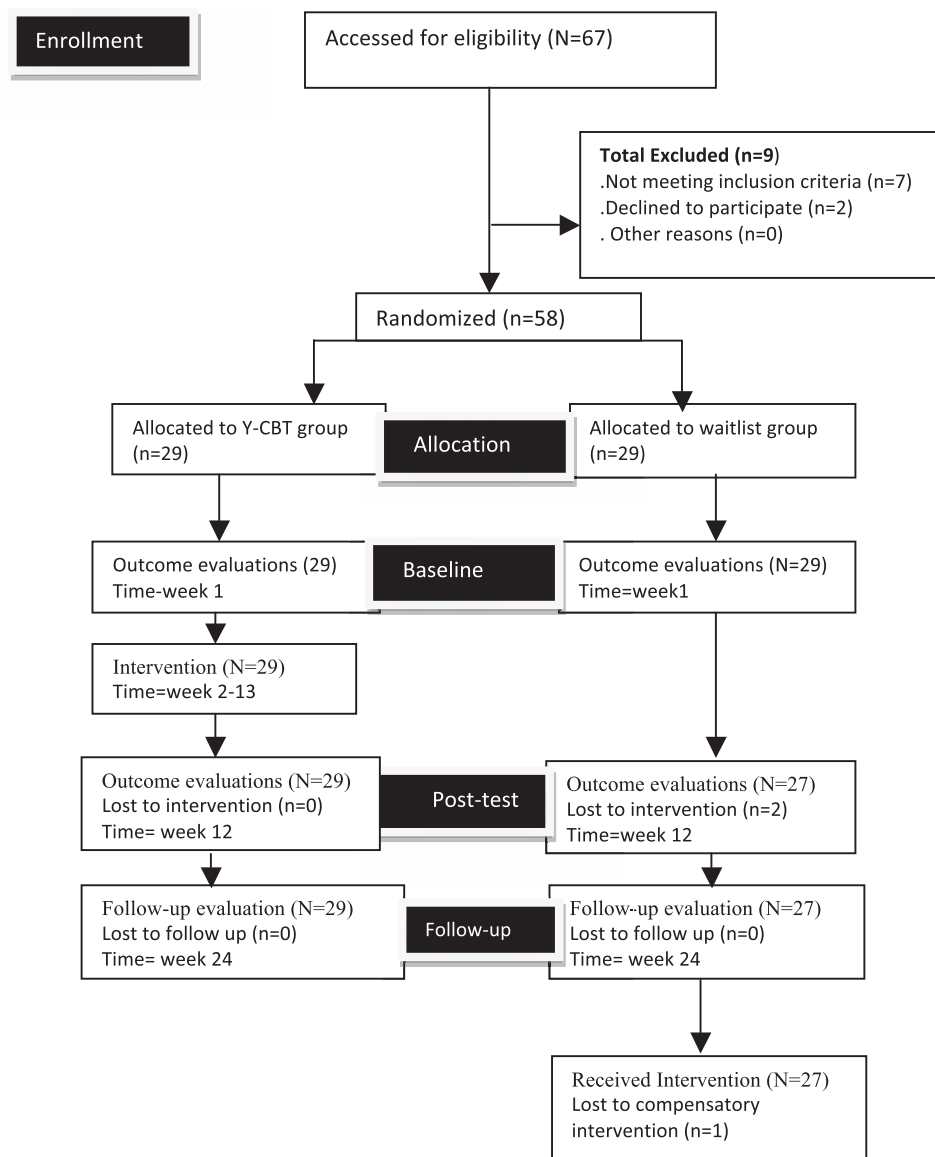
Out of 67volunteers who were screened for eligibility based 7 volunteers were excluded based on not meeting the inclusion criteria, 2 volunteers declined to participate. The 58 potential participants who met all the inclusion criteria were randomly assigned to Y-CBT group (n=29) and wait-list control group (n=29) (see Fig. 1) using a sequence allocation software (participants were asked to pick 1 envelope containing pressure-sensitive paper labeled with either Y-CBT or WLG (waitlist group) from a container. Information about randomization was concealed from the participants until the intervention was assigned. Randomization was conducted by one of the

research assistants. For good communication about the stages of the intervention, the researchers with the help of one of the research assistants opened 2 WhatsApp chat groups and added the participants according to the groups they were allocated to.

Thereafter, the baseline evaluation was conducted for participants in both the Y-CBT group and the WLG (Time 1), using MBI-ES. The researchers with the participants in the Y-CBT group scheduled for commencement of the intervention.

At the fourth stage, participants in the Y-CBT group received a 2 hours Y-CBT intervention once a week for 12 weeks (See intervention sessions). To ensure participants' compliance, the researcher gave financial reinforcement to the participants, covering their transport and data bundle every month to enable them to participate in intervention sessions. Each session was followed by a practice exercise by the participants.

At the fifth stage, post-test (time 2) data were collected from both Y-CBT and WLG using MBI-ES. Further, a follow-up meeting was held at 3 months for updates and the collection of follow-up data (Time 3). The same instrument (MBI-ES) was used



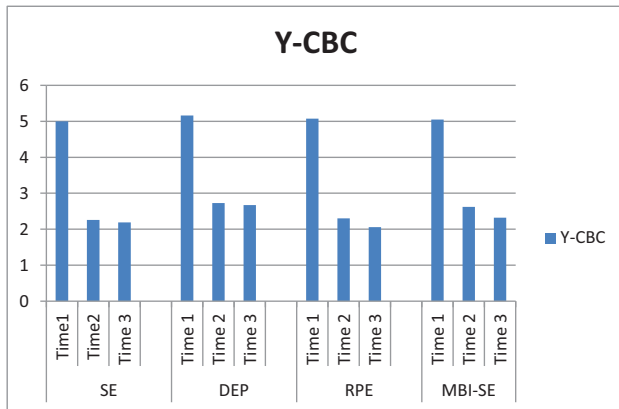


Figure 1. Bar chart representation of changes on variable scores across Time in Y-CBT group. EE = emotional exhaustion, DEP = depersonalization, RPE = reduced professional efficacy/professional dissatisfaction, MBI = Malach Burnout Inventory for Educators. The figure showed significant changes in the scores from Time 1-Time 2 but nonsignificant reduction from Time 2–Time 3.

to collect 3 months follow-up (Time 3) (see Fig. 2). All intervention and data collection were held in a school hall.

Finally, immediately after the 3 months follow-up assessment, the intervention program commenced for the wait-listed group (July–September, 2019). This followed the same procedure used for the Y-CBT group. This cross over arm was aimed at treating burnout in the control group participant. Hence all the participants benefited from the study.

The Y-CBT intervention was delivered and moderated by 2 of the researchers who are experts in CBT and a hired Yoga expert, in collaboration with 4 research assistants (2 experts in occupational therapy). All the research assistants were remunerated by the researchers.

Reminder messages were sent via the WhatsApp platform to the participants a day to each scheduled time, and early morning hours on each day of intervention meeting to ensure participants’ active participation in the intervention sessions. Data collected from the Y-CBT group at each assessment were compared to that from the WLC group.

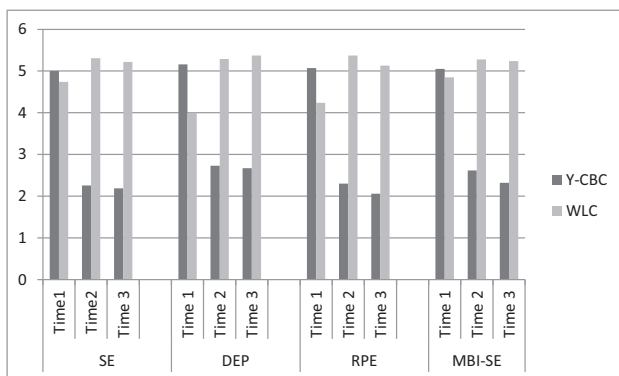


Figure 2. Bar chart representation of changes on variable scores across Time. EE = emotional exhaustion, DEP = depersonalization, RPE = reduced professional efficacy/professional dissatisfaction, MBI = Malach Burnout Inventory for Educators. The figure shows that the mean ratings of the Y-CBT group was not significantly lower than the waitlisted group in SE, DEP, RPE, and the total MBI-SE scores at pretest (Time 1), but were significantly lower during Time 2 and Time 3.

Demographic information of the participants in the Y-CBT group and WLG shows that, 16 (28%) of the participants were males, while 42 (72%) were females. Four (7%) male and 25 (43%) female participants were in the Y-CBT while 12 (21%) male and 30 (52%) females were in the control group. Eleven (19%) and 9 (16%) of the participants in Y-CBT and WLC groups respectively had 1 to 2 years of experience; 10 (17%) and 8 (14%) in Y-CBT and WLG had 3 to 5 years of experience, while 9 (16%) and 12 (21%) also had above 5 years of experience in teaching in special schools. The mean age of the participants was 32.12 and 31.77 respectively for Y-CBT and WLG. A total of 10 (17%) and 12(21%) had NCE in Y-CBT and WLG respectively; 19(33%) and 17 (29%) participants had bachelor’ degrees respectively in Y-CBT and WLG.

3.4. Intervention

A Yoga-cognitive behavioral therapy program manual was developed by 2 of the researchers in collaboration with 2 experts (one in CBT and the other in Yoga). In developing the manual, CBT strategies were blended with after-session Yoga exercises. The CBT sessions were based on using the “ABCDE” model (Antecedent/ ABCDE new philosophy) to identify, assess, revalidate, and change unhelpful absolutistic and irrational beliefs associated with work experiences. The major aims of Y-CBT were to 1) use ABCDE group therapeutic model (CBT) in “disputing”–challenging and questioning teachers’ work-related irrational and dysfunctional beliefs and to replace them with rather helpful and functional beliefs^[89,90] use yoga to reduce the physiological symptoms of burnout and help the participants out of the vicious circle of negative thoughts through Yoga “Victory Meditation,” affirmations and physical exercises.^[61] This framework helped provide a targeted mind/body approach to burnout reactions and symptoms.

The ABCDE formed the basis of explaining the relationships links between activating (A) events associated with teaching children with ASD, dysfunctional thoughts, beliefs or cognitions arising from those events (B); the emotional and behavioral consequences of the beliefs (C)^[89]. Then, disputation techniques (D) are used to eliminate the maladaptive, dysfunctional, and self-limiting beliefs and cognitions.^[89,91,92] Disputation involves challenging and comparing the maladaptive thoughts with more adaptive ones. Ellis^[93] theorized that the best way to counter irrational beliefs is by considering realistic and logical ones. Hence as participants become aware of and counteract their dysfunctional beliefs, they come up with more effective world-views (E). This ABCDE model as used in earlier studies formed the basis of activities throughout the intervention (See Table 2).

Yoga complementary approaches involved after-session physical/posture exercise and meditation practices. The interaction between cognitions, emotions, and physical symptoms were highlighted and skills were taught to reduce the incongruity between sensation and perception. Traditional yoga (asanas, breathing exercises, and meditation) exercises were used in maintaining physical, mental, and emotional well-being. The traditional yoga used in this study was appropriate for beginners, given that it is mild and does not demand too much effort. The Yoga intervention was meant to help participants understand and appreciate the interplay between their bodily sensations and emotional feelings. Ten different asanas possess were used, which are Tadasana (Mountain pose); Vrikshasana (Tree Pose); Adho Mukho Svanasana (Downward Facing Dog Pose); Trikonasana

Table 2
t test analysis of the baseline data on participants' MBI-ES subscales.

Subscales	Group	N	$\bar{X} \pm SD$	Df	t	P	Mean Diff	95%CI lower	Upper
EE score	Y-CBT	29	5.00 ± 1.09	56, 52.60	0.79	0.56	0.26	-0.40	0.92
	Waitlist control	27	4.74 ± 1.41						
DEP score	Y-CBT	29	5.16 ± 1.05	56, 51.52	0.48	0.69	0.16	-0.49	0.81
	Waitlist control	27	4.00 ± 1.42						
RPE	Y-CBT	29	5.07 ± .35	56,48.00	0.57	0.66	0.17	-47	0.86
	Waitlist Control	27	4.24 ± .33						
MBI-ES Score	Y-CBT	29	5.06 ± .89	56, 48.60	0.70	0.58	0.21	-39	0.81
	Waitlist control	27	4.85 ± 1.35						

EE = emotional exhaustion, DEP = depersonalization, RPE = reduced professional efficacy/professional dissatisfaction, MBI-ES = Maslach Burnout Inventory Educators Survey, N = number, \bar{X} = mean, SD = standard deviation, Df = degree of freedom, t = t test score, P = P value, CI = confidence interval, Y-CBT = cognitive behavioural therapy with yoga.

(Triangle Pose); Kursiasana (Chair Pose); Naukasana (Boat Pose); Bhujangasana (Cobra Pose); Paschimottanasana; Child's Pose and Sukhasna.^[94]

Breathing exercises focused on basic Breath Awareness; Ujjayi Pranayama (Victorious Breath or Ocean Breath); Kapalabhati Pranayama (Breath of Fire or Skull-Shining Breath); Kumbhaka Pranayama (Breath Retention), Nadi Shodhana Pranayama (Alternate-Nostril Breathing). Meditation involved getting quiet, calm, and focused; mind slows down, relaxation, and staying positive by focusing on something that brings you peace to mind as well as choosing to shed go all the negative thoughts that interfere with health. Meditation also helps you become more mindful of your mind and body and identifies areas of distorted worldviews that lead to burnout.

Hence, in Y-CBT we designed a 12 weeks module of CBT accompanied by traditional yoga exercises as discussed above. Each session of the module includes information, exercises, worksheets, images, examples, homework exercises, and template for progress feedback.

3.5. Recruitment, response rates, attrition, and adherence

Before recruitment, we obtained informed consent from all potential participants. A total of 67 potential participants responded to the invitation to participate in the study out of which 58 participants were included in the study. Others were excluded based on not meeting the inclusion criteria and other reasons. Generally, the response and adherence rate were high and the attrition rate was low. Out of the 58 participants who were randomized for the study 56 (96.5%) completed the sessions and all evaluations, while 2 participants (3.5%) were lost to posttest for a known reason. One lost her husband and the other was hospitalized for an orthopedic case and could not continue.

3.6. Design and data analyses

Baseline data were analyzed using independent t-test statistics. A 2-way analysis of variance with repeated measures was used to compare baseline, post-intervention, and follow-up data. Partial Eta square was used to report the effect size of the intervention on the dependent measure's dimensions.

A paired sample t test was used to determine the difference in participants' ratings across Time 1 and 2, as well as Time 2 and 3. Statistical Package for Social Sciences version 24.0 and Microsoft Excel were used for analyses. The results are presents in tables and charts.

4. Results

Data in Table 2 show t test statistics of difference in the MBI-SE subscales between the Y-CBT group and the WLG at baseline (Time 1). The participants in the Y-CBT and the WLG did not vary significantly in their ratings in the 2 main burnout subscales [emotional exhaustion (EE), depersonalization (DEP), and reduced professional efficacy (RPE)]. There was a nonsignificant difference in perception of EE between Y-CBT (5.00 ± 1.09) and WLG (4.74 ± 1.41) groups, (mean difference = 0.26; t = 0.79; P = .56; confidence interval [CI] = .40, 0.92). This indicates that participants in both the Y-CBT group and WLG had an equally high rating of their emotional exhaustion at baseline.

The mean ratings of DEP subscale were also of a non-significant difference between Y-CBT (5.16 ± 1.05) and WLG (5.00 ± 1.42) at baseline (mean difference = 0.16; t = 0.48, P = 0.69) at baseline. This suggests that both groups did not vary significantly in their level of DEP at baseline. Considering the professional efficacy (PE) subscale, the mean rating of the Y-CBT group (5.07 ± 0.35) and the WLG group (5.24 ± 0.33) were not of significant difference (mean difference = 0.17; t = 0.57; P = 0.66). A high mean score shows dissatisfaction in their professional efficacy. So, both groups did not vary significantly in their dissatisfaction in professional efficacy. Generally, participants in Y-CBT (5.06 ± 0.89) and WLC (4.85 ± 1.35) groups had nonsignificant difference in their total MBI-ES rating (mean difference = 0.21; t = -0.70, P = 0.58). Hence, participants in both Y-CBT and WLG groups experience symptomatic manifestations of burnout.

Data in Table 3 show the repeated measures analysis of variance of the effect of the Y-CBT on participant post-test (Time 2), follow-up (Time 3) ratings in the teachers' MBI-ES subscales. The results revealed that the main effects of Y-CBT on 3 subscales of MBI-ES were significant, at postintervention evaluations (post-test and follow-up). Table 4.

There was a significant difference in the participants rating of emotional exhaustion (EE) of the Y-CBT group (2.26 ± 1.83) and WLG (5.31 ± 0.53); $F(1, 56) = 67.08$, $P = 0.000$, $\eta^2 = 0.48$ and Time 3 (Y-CBT group [2.19 ± 1.85]; WLG [5.22 ± 0.43]; $F[1, 56] = 73.71$, $P = 0.000$, $\eta^2 = 0.66$). Comparison of Y-CBT and WLG at Times 1, 2 and 3 are also shown in Figure 1. These results show that the participants' EE was reduced using Y-CBT intervention modalities, and the effect was sustained. The DEP score was significantly reduced in the T-CBT group over the WLG at posttest (Y-CBT group [2.73 ± 1.73]; WLG [5.29 ± 0.35]; $F[1, 56] = 60.56$, $P = 0.000$, $\eta^2 = 0.41$), and at follow-up (Y-CBT group [2.67 ± 1.61]; WLG [5.37 ± .63]; $F[1, 56] = 69.90$, $P = 0.000$, $\eta^2 = 0.70$).

Table 3
Repeated measure analysis of variance of the effectiveness of the Y-CBT intervention on posttest and follow-up scores of participants' on MBI-ES subscales.

Subscales	Time	Y-CBT (N=29)	Waitlist control Group (n=27)	Df	F	Sig	95%CI	η^2
EE Score	Time 2	2.26 ± 1.83	5.31 ± .53	1, 56	67.08	0.000	2.57, 6.37	0.48
	Time 3	2.19 ± 1.85	5.22 ± .43	1, 56	73.71	0.000	2.48, 6.39	0.66
DEP Score	Time 2	2.73 ± 1.73	5.29 ± .35	1, 56	60.56	0.000	3.07, 6.42	0.41
RPE Score	Time 3	2.67 ± 1.61	5.37 ± .63	1, 56	69.90	0.000	3.06, 6.62	0.70
	Time 2	2.30 ± 1.38	5.37 ± .48	1, 56	58.13	0.000	3.77, 6.56	0.48
MBI Score	Time 3	2.06 ± 1.93	5.13 ± .38	1, 56	70.11	0.000	2.32, 6.28	0.66
	Time 2	2.62 ± 1.68	5.28 ± .21	1, 56	71.27	0.000	2.98, 6.36	0.63
	Time 3	2.32 ± 1.77	5.24 ± .19	1, 56	77.64	0.000	2.64, 6.31	0.80

EE = emotional exhaustion, DEP = depersonalization, RPE = reduced professional efficacy/professional dissatisfaction, MBI-ES = Maslach Burnout Inventory Educators Survey, N = number, SD = standard deviation, Df = degree of freedom, F = calculated ANOVA statistics, P = P value, CI = confidence interval, Y-CBT = cognitive behavioural therapy with yoga.

Table 4
Paired sample t test on the changes in burnout scored across times of evaluation.

Subscale				Df	t	P	95% CI	
							Low	High
EE	Y-CBT	Pair 1	Time1–Time2	27	5.61	0.000	1.71	3.70
		Pair 2	Time2–Time3	27	1.13	0.268	−0.06	0.22
	WLG	Pair 1	Time1–Time2	26	−1.45	0.159	−.64	0.11
		Pair 2	Time2–Time3	26	−0.97	0.337	−0.21	0.07
DEP	Y-CBT	Pair 1	Time1–Time2	27	5.79	0.000	1.56	3.27
		Pair 2	Time2–Time3	27	0.35	0.727	−0.22	0.31
	WLG	Pair 1	Time1–Time2	26	−0.66	0.511	−0.51	0.26
		Pair 2	Time2–Time3	26	−0.72	0.474	−0.26	0.12
RPE	Y-CBT	Pair 1	Time1–Time2	27	5.14	0.000	1.07	2.51
		Pair 2	Time2–Time3	27	1.37	0.204	−0.07	0.30
	WLG	Pair 1	Time1–Time2	26	−0.14	0.134	−0.76	0.10
		Pair 2	Time2–Time3	26	1.16	0.109	−0.04	0.52
MBI-ES	Y-CBT	Pair 1	Time1–Time2	27	6.15	0.000	1.62	3.25
		Pair 2	Time2–Time3	27	1.08	0.208	−0.15	0.46
	WLG	Pair 1	Time1–Time2	26	−1.38	0.137	−0.65	0.12
		Pair 2	Time2–Time3	26	−0.67	0.103	−0.58	0.17

A table showing changes in burnout scores from pretest to posttest and from posttest to follow-up.

EE = emotional exhaustion, DEP = depersonalization, RPE = reduced professional efficacy/professional dissatisfaction, MBI-ES = Maslach Burnout Inventory for Educators' Survey, Df = degree of freedom, t = t test score, P = P value, CI = confidence interval, WLG = waitlist group, Y-CBT = yoga-based cognitive behavioural therapy.

There was a significant difference in the participants rating of Professional efficacy (PE) of the Y-CBT group (2.30 ± 1.38) and WLG (5.37 ± 0.48); F (1, 56) = 58.13, P = 0.000, $\eta^2 = 0.58$ and Time 3 (Y-CBT group [2.06 ± 1.93]; WLG [5.13 ± 0.38]; F [1, 56] = 70.11, P = 0.000, $\eta^2 = 0.66$) (See Fig. 1) These results show that the participants' dissatisfaction with their professional efficacy was reduced using Y-CBT intervention modalities, and the effect was sustained.

Further, there was a significant difference in the overall MBI-ES score of the Y-CBT group (2.62 ± 1.68) and WLG (5.28 ± 0.21) at posttest (F [1, 56] = 71.27, P = 0.000, $\eta^2 = 0.63$) at post-test-Time 2 evaluation. Follow-up data also indicated a significant difference in the MBI-ES scores of the Y-CBT group (2.32 ± 1.77) and WLG (5.24 ± .19): F (1, 56) = 77.64, P = 0.000, $\eta^2 = 0.80$, with Y-CBT group rating remarkably lower than the WLG in each of the evaluations (See Fig. 2). These results show that Y-CBT had a sustained minimizing effect on all dimensions of the job burnout of teachers of children with ASD (See Table 3).

Additional analysis was conducted using paired sample t test to explore changes in the 3 subscale scores (EE, DEP, PE, and MBI-ES scores) across pre, post, and follow-up in Y-CBT and WLG groups. Paired sample t test showed a significant decreases in

MBI-ES scores of Y-CBT group between Time 1 and 2 (t [27] = 5.61, P = 0.000, CI = 1.71, 3.70) and nonsignificant differences in Time 2 and 3 (t [27] = 1.13, P = 0.268, CI = −0.06, 0.22) (See Fig. 1). On the other hand, WLG group did not have significant change across Time 1–2 (t [26] = −1.45, P = 0.159, CI = −.64, 0.11) and Time 2–3 (t [26] = −0.97, P = 0.337, CI = −0.21, 0.07) (See Fig. 3). This indicates that the reduction in Y-CBT group's EE score from pre-test to posttest was sustained through 3 months follow-up (See Fig. 2).

In respect of DEP, there was also significant reduction in participants' rating across Time 1 and 2 (t [27] = 5.79, P = 0.000, CI = 1.56, 3.27) but nonsignificant differences in Time 2 and 3 (t [27] = 0.35, P = 0.727, CI = −0.22, 0.31) for Y-CBT group (See Fig. 1). On the contrary, participant in the WLG group did not vary significantly in their DEP scores across Time 1–2 (t [26] = −0.66, P = 0.511, CI = −0.51, 0.26) and 2–3 (t [26] = −0.72, P = 0.474, CI = −0.26, 0.12) (See Fig. 3). These indicate that depersonalization score of the Y-CBT group reduced significantly at posttest and was sustained across follow-up.

Participants in the Y-CBT group also had significant reduction in their dissatisfaction with professional efficacy (RPE) scores across Time 1 and 2 (t [27] = 5.14, P = 0.000, CI = 1.07, 2.51); but

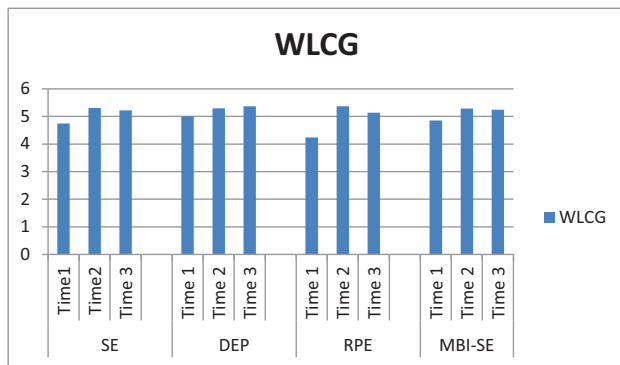


Figure 3. Bar chart representation of changes on variable scores across Time in the WLC group. EE = emotional exhaustion, DEP = depersonalization, RPE = reduced professional efficacy/professional dissatisfaction, MBI = Malach Burnout Inventory for Educators. The figure showed nonsignificant reduction in the scores from Time 1–Time 2 and from Time 2–Time 3.

not significant across Time 2–3 ($t [27]=1.37, P=0.204, CI=-0.07, 0.30$) (See Fig. 1). On the other hand, participants in the WLC group did not record significant changes in their PE scores across Time 1–2 ($t [26]=-0.14, P=0.134, CI=-0.76, 0.10$) and Time 2–3 ($t [26]=1.16, P=0.109, CI=-0.04, 0.52$) (See Fig. 1 and 3).

In summary, participants in the Y-CBT group had significant reduction in overall MBI-ES scores across Time 1 and 2 ($t [27]=6.15, P=0.000, CI=1.62, 3.25$); but not significant across Time 2–3 ($t [27]=1.08, P=0.208, CI=-0.15, 0.46$). This indicated that burnout reduced significantly in this group and the reduction was sustained.

On the other hand, participants in the WLC group did not record significant changes in their MBI-ES scores across Time 1–2 ($t [26]=-1.38, P=0.137, CI=-0.65, 0.12$) and Time 2–3 ($t [26]=-0.67, P=0.103, CI=-0.58, 0.17$).

5. Discussion

Teachers' job burnout has been found to undermine work productivity. This study sought to investigate the effectiveness of Y-CBT in reducing job burnout in teachers of children with ASD. Results showed that Y-CBT and wait-list groups (WLG) did not vary significantly in their emotional exhaustion (EE), depersonalization (DEP), reduced professional efficacy (RPE), and the total MBI-ES scores at baseline evaluation. Y-CBT intervention led to a significant reduction in all subscales of MBI-ES of participants at post-treatment (Time 2) evaluation. All the recorded reduction at post-test evaluation was sustained through Time 3 (follow-up).

The significant reduction in participants' burnout shows that even when the work conditions are demanding and challenging, employees can be guided through Y-CBT modalities to overcome burnout syndrome. The result of this study synchronizes with prior studies that found Y-CBT effective in dealing with burnout and related psychological disorders. For instance, in a pilot study, Allen, et al^[76] tested the efficacy of a 12-weeks manualized Y-CBT protocol on pain-related physical and internalizing symptoms in youth and showed that the protocol can be used to reduce both internalizing and somatic symptoms in the participants. Khalsa, et al^[61] found that Y-CBT accounted for statistically significant improvements in state and trait anxiety,

depression, panic, sleep, and quality of life of participants suffering from anxiety disorders.

The findings of the present study further concur with a randomized study of cognitive-behavioral therapy and yoga in stress management among participants from a large Swedish company.^[79] Psychological and physiological symptoms showed significant improvements in both yoga and CBT groups. No significant difference was found between the 2 programs. It was concluded that both cognitive behavior therapy and yoga were efficacious stress management techniques.

In a randomized control trial,^[80] investigated the effect of traditional yoga, mindfulness-based cognitive therapy, and cognitive behavioral therapy, on health-related quality of life in patients on sick leaves due to burnout. Results showed among others that the ten subscales in traditional yoga made significant improvements in the main domains affected in burnout, such as emotional well-being, physical well-being, cognitive function, and sleep. Physical exercise with positive shift in negative perception (yoga and CBT) can help to harmonize the mind and body to bring about cognitive, emotional, and physiological outcomes. The result of the present study synchronized with,^[80] given that it confirms the effectiveness of both yoga and CBT. In a review of literature, Cocchiara, Peruzzo, M, Mannocci, Ottolenghi, Villari, Polimeni, and La Torre,^[95] found that yoga could be effective in reducing stress and burnout in healthcare workers.

Thus Y-CBT works by disputing (D) the negative and dysfunctional beliefs "B" about the stressful situation "A" and replacing them with the healthier ones (E); developing problem-solving skills necessary for contending with emotional and somatic symptoms, and through physical activities, bring together the mind and the body to shake off negative psychosomatic and cognitive symptoms associated with job-demands^[96,97] Y-CBT helps the participants to develop self-monitoring, time management, and re-evaluation skills that equip them to understand their thoughts concerning the trending work-condition for functional efforts. So, as the participants continue to apply these skills, they tend to continue to acquire more expertise in managing stress and a more functional approach to job demands^[98] thereby reducing job burnout. Earlier studies showed that a positive change in perception of stress can lead to a reduction in physiological and psychological symptoms such as burnout.^[98,99,100] Y-CBT could counter negative thoughts, feelings; emotions associated with occupational environments and reduce adverse reactions in the form of burnout, replacing them with more helpful ones and deal with negative responses that put the teachers of ASD children in a vicious circle.^[101]

Furthermore, both yoga practices and CBT each have effects in minimizing dysfunctional thought processes. While CBT trains individuals to identify, counter and replace dysfunctional thoughts with more functional ones, yoga inhibit the tendency for dysfunctional thoughts by causing the individual to focus on the physical activities.^[61] In this way, CBT and yoga may complement each other to reduce burnout, both by reducing the tendency for negative thoughts to arise (yoga) and by replacing the maladaptive thoughts that do arise (CBT).

The present study made use of a relatively small sample. Further study could apply a larger sample to confirm the effectiveness of the Y-CBT on burnout among teachers of children with ASD. A major limitation of the present study is that the study did not take into account the presence of axis-1 disorders (depression, anxiety, substance use, etc) in the study. Given the overlapping links between burnout and such disorders,

further researchers working with Y-CBT are encouraged to measure the axis-1 disorders.^[102] This study utilized only self-report measures to collect data. Further study may use additional qualitative approaches to ascertain participants' satisfaction with the Y-CBT modalities. Future studies could also explore the moderating effects of demographic variables like gender, years of experience, rank, and marital status. The package (Y-CBT) may also be tried in different populations of employees with burnout conditions. Future studies may be designed to compare Y-CBT and traditional CBT as the current study did not consider the area.

6. Conclusion

The current study investigated the effectiveness of Y-CBT on the work job-burnout of teachers of children with ASD. A 12-week Y-CBT led to a significant reduction in burnout participants. The researchers, therefore, conclude that Y-CBT is efficacious in minimizing burnout among teachers teaching ASD children.

Author contributions

Conceptualization: Ibiwari C Dike, Charity Onyishi, Dorothy E Adimora, Uchenna N Eze, Angela Eze, Gloria C. Ugwu, Felicia U. Iremeka.

Data curation: Uchenna N Eze, Patience N Obiweluzo, Grace N. Adama.

Formal analysis: Charity Onyishi, Uchenna N Eze, Dorothy E Adimora, Francisca N. Ogba, Christopher N. Ngwu.

Investigation: Charity Onyishi, Angela Eze, Patience N Obiweluzo, Vivian C Nwaeze, Casimir Ani, Grace N. Adama.

Methodology: Charity Onyishi, Uchenna E Uzodinma, Patience N Obiweluzo, Zipporah O Omenma, Felicia U. Iremeka.

Project administration: Zipporah O Omenma, Casimir Ani.

Resources: Uchenna E Uzodinma, Zipporah O Omenma, Casimir Ani, Gloria C. Ugwu, Felicia U Iremeka.

Software: Augustine O Onu, Vivian C Nwaeze, Christopher N Ngwu, Felicia U Iremeka.

Supervision: Ibiwari C Dike, Patience Obiweluzo.

Validation: Christiana C Ugodulunwa, Uchenna E Uzodinma, Augustine O Onu, Felicia U Iremeka.

Visualization: Charity Onyishi, Vivian C Nwaeze, Francisca N. Ogba.

Writing – original draft: Francisca N Ogba, JaneFrancis C Onu, Felicia U Iremeka, Casimir Ani.

Writing – review & editing: Christiana A Ugodulunwa, JaneFrancis C Onu, Felicia U Iremeka.

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