

Study Protocol for Evaluating the Effect of Cognitive Behavioral Therapy with Yoga Therapy on Stress Management among University Lecturers

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Abstract

This study describes a protocol for a randomized control trial to evaluate the effectiveness of yoga-complemented cognitive behavioural therapy on stress among university teachers. A total of 93 University teachers with moderate to high stress level will be included in the study. Participants will be randomly assigned to Y-CBT (N=46) and waitlist control (N=47) groups. The Y-CBT group will participate in a 2 hours Y-CBT program weekly for a period of 12 weeks. Two instruments- Single Item Stress Questionnaire (SISQ) and Teachers' Stress Inventory (TSI) will be used to collect data. Data will be collected at baseline; post-test and follow-up evaluations. Means, standard deviations, t-test statistics, repeated measures ANOVA and bar charts will be used to analyze data for the study. A yoga-cognitive behavioural therapy program manual developed by two of the researchers in collaboration with two experts (one in CBT and the other in Yoga) will be used for this study. In developing the manual, CBT strategies are blended with after-session Yoga exercises. The CBT sessions are based on the "ABCDE" model (Antecedent/Activating event, Beliefs, Consequences, Disputing, and Effective new philosophy) to identify, assess, revalidate and change unhelpful absolutistic and irrational beliefs associated with work experiences.

Key words: Job-stress, Stress management, University teachers, cognitive behavioural therapy, Yoga Therapy, health, well-being.

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I. Introduction

Worldwide there is a heightened level of stress across employees' populations^[1-4] and increasing economic and health burdens on the world population^[4, 5]. Stress is characterized by unpleasant negative emotions and physical exhaustion that lead to worry, pain, anxiety, depression, frustrations and burnout.^[7-9] Work conditions and individual's situations interact to produce heightened stress^[10]. The teaching profession is one of the most stressful occupations all over the globe.^[11, 12] At the top list of people most affected by stress are teachers at all levels.^[13, 14] University teachers particularly present a higher prevalence of stress across culture and settings.^[15-19] Over 60% to 70% are reported with mental health disorders associated with stress due to the enormity of the workload.^[20]

Stress in university teachers tend to emanate mainly from school administration and management, poor working condition, time pressure, workload, coping with changes, role conflict, and ambiguity, maintaining discipline, curriculum ambiguity, dealing with colleagues, self-esteem, and status.^[21, 22] More critical challenges are those associated with teaching and scientific research in addition to personal development pressures.^[23-25] University teachers in Nigeria encounter increased demands to meet up with the academic, social and emotional demands of their students^[26] as well as the emotionally taxing and potentially frustrating promotion syndrome of research and publication titled "publish or perish".^[27, 28]

Strike and academic calendar interruption,^[29] delay and irregular payment of salary,^[30] poor working condition,^[31] teachers' work-life,^[32] and poor facilities aggravate stress symptoms. Teachers who are overwhelmed by these negative experiences tend to encounter repeated emotional exhaustion, depersonalization, and feeling of lack of accomplishment which makes a good number of the teachers leave the teaching profession.^[33] All these not only impinge on the productivity and creativity of university teachers but also affect negatively their overall wellbeing, morale and expose them to somatic and psychiatric disorders which are inimical to the achievement of educational aims.^[34]

Reduction in stress will increase performance,^[35] promote better social relationships and reduce sick leave and absenteeism.^[36] Hence, stress management interventions are needed to checkmate the effects of stress on both the employees and their organizations. Researchers have identified two techniques to address the impact of stress based on their effectiveness and potency. For instance, Yoga^[37] and cognitive behaviour therapy (CBT)^[6] have been reported as effective techniques.

Yoga is an alternative and complementary treatment used in reducing psychosomatic challenges including stress. Maddux et al.^[39] 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 relaxation, meditation and physical workout.^[40, 41] Yoga is a therapeutic approach that brings in harmonize the bodily and psychological and assist one to attain physical and mental peacefulness. Yoga is intended to complement conservative treatment for clients with an assortment of physical and mental exercises such as breathing exercises, meditation and poses.^[42-44]

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^[45] is based on 8 limbs that referred to as ethical principles for meaningful and purposeful living. Maths, and Srinivasraju^[46] in their study report that yoga

is a good technique that relax the body and calm the mind and ideally reduces stress. Experiments have shown yoga to be as effective as a drug when it comes to psychosomatic disorders.^[47] Eskandar and Sasan^[48] reported that yoga practice is an invaluable technique for managing stress-related illnesses such as anxiety, depression, and burnout.^[40, 49, 50]

Yoga has also been found to help to improve psychological factors such as worry and rumination that impact on physical health.^[16, 51] It also impacts positively on body image and mood,^[17, 52, 53] and can create balance for physical, emotional, mental and spiritual capacities and reduce the risk of cardiovascular diseases.^[54, 55] Further, Yoga techniques impacts on metabolic syndrome,^[56] and associated musculoskeletal disorders.^[57] Yoga is used as an alternative health practice to prevent stress because of its efficiencies in relieving health challenges.^[58] In a study by Lotfizadeh et al.^[4], yoga was found to bring about improvements in mood and well-being, as well as stress resilience factors such as feelings of clear-mindedness, composure, elation, energy, and confidence. Yoga is used as both a complementary therapy and a separate treatment.^[42, 43, 44, 59, 60] In this study, we adopted a complementary approach by combining yoga with cognitive behavioural therapy (CBT) for stress management.

Cognitive Behavioral Therapy (CBT) is a psychotherapeutic treatment found to be effective in modifying everyday behaviour. The core premise of CBT intervention approach as reported by Hofmann^[61] 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.^[52] affirmed that CBT aims to positively influence emotion by changing the maladaptive cognitions that fan the embers of emotional distresses. 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.^[62] CBT commonly involves keeping a diary of significant events and associated feelings, thoughts and behaviours, 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 behaviours that are based on helpful reality.

The theory of CBT emphasizes the ABCDE model.^[53, 54] This model holds that certain critical incidents or situations (A) activate schema, or internalized thought patterns (B) 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 (C) which reduces the individual's capacity of functioning. CBT addresses this by helping the individual to identify and dispute (D) misconceptions and unhelpful beliefs about the event and develop new conceptions about the situation (E) hence, developing new behavioural responses to stressful events.^[65] 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 behavioural scripts for responding to stressors.^[12]

The ABCDE model of CBT has been widely used to help individuals with health challenges associated with cognitions. Evidence-based studies are demonstrating the effectiveness of CBT in the treatment of mental illnesses such as stress, anxiety, depression among others.^[66-68] 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 comorbidity.^[69,70] CBT is a structured time-limited therapeutic approach to current problems.^[71] CBT intervention among teachers in the universities is concerned with helping teachers identify patterns of thought that affect

their behaviour and how they can take control of maladaptive patterns. CBT training for teachers will enable them to identify causes of their stress, acquire effective skills for dealing with the stress, and use rehearsal of skills to acquaint themselves with skills for dealing with similar situations subsequently.

Some researchers differ in their opinion of using CBT as one single technique in the treatment of psychosomatic disorders.^[60] As CBT focuses on changing attitudes and belief systems contributing to stress, a combination of other techniques that could have mind-body effects are required for enhanced outcomes.^[60] Thus, using yoga to complement the CBT intervention for stress could maximize the effectiveness of intervention by taking care of both mental and somatic aspects of psychosomatic disorders such as stress.

Shreds of evidence abound affirming the invaluable benefits of complimenting CBT with Yoga (Y-CBT) for heightened outcomes.^[44, 72-76] Out of these studies, none has used Y-CBT in the treatment of stress among teachers in the Nigerian Universities. The present study intends to expand research by using Y-CBT to help this group of teachers who have been said to face more heightened stress compared to other employees in Nigeria. This study will be helpful to students, teachers, as well as the University as it will ultimately improve school outcomes.

Objectives

The aim of planning this study is to evaluate the effectiveness of a Y-CBT specific exercises on the stress perceptions and manifestations of university lecturers. We will also investigate the participants' satisfaction with Y-CBT intervention. We, therefore, hypothesize that by the completion of the Y-CBT intervention program, the mean stress perception of the participants would reduce significantly over the course of post-treatment assessment and that this reduction would be sustained across 3 months follow-up assessment.

II. Method

Study Design

This prospective randomized controlled trial will be performed in as a group therapy session in a non-clinical setting. During the first phase of the study, participants in the Y-CBT group will participate in a 12-week Y-CBT intervention program. Functional data will be collected on four occasions (pre-intervention-Time 1, post-intervention-Time 2 and 3 months follow-up-Time 3).

Ethical consideration

We obtained approval from the Faculty of Education Research Ethics Committee at the authors' institutions. The study will also comply with the research ethical standard as specified by the American Psychological Association^[77] and the World Medical Association Declaration of Helsinki.^[78] All the study participants will sign written consent before participating in the study. This study is also registered in the AEA RCT Registry and the unique identifying number is: "AEARCTR-0005532". Modifications on the protocol will be communicated after conducting the research.

Measures

The Single Item Stress Questionnaire (SISQ): This single-item measure of stress symptoms will be used as one of the inclusion/exclusion criteria for the study. The instrument has consistently been found valid

and reliable in stress researches, ^[79, 80] showing Chronbach reliability indices ranging from 0.80-0.86. 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 on a 5-point scale ranging from 1-"not at all" to 5-"very much". In this study, scores ranging from 1-2 will indicate low stress; 3 indicate moderate stress; while 4-5 indicate a high-stress level. The researcher found a Chronbach Alpha reliability index of 0.79 among 20 adult workers in Nigeria for SISQ.

The Teachers' Stress inventory (TSI): TSI (Fimian, 1984) is a 49-item questionnaire rated on a 5-point Likert scale. The TSI assesses stress in ten subscales, covering two major components of stress (Stress Sources and Stress Manifestations). Five subscales, including Time management, Work-related stressors, Professional distress, Discipline and motivation, and Professional investment measures stress sources. Five subscales of emotional manifestations (such as anxiety, depression, etc), Fatigue manifestations (eg, changes in sleep, exhaustion, etc), Cardiovascular manifestations (blood pressure, heart rate, etc), Gastronomical manifestations (stomach pains, cramps, etc) and Behavioral manifestations (use of prescription drugs/alcohol, sick leave, etc) measure Stress Manifestations. The TSI has been found with a good psychometric property in South Africa. ^[81] To establish the usability of the instrument among University teachers in Nigeria, the TSI was trial-tested in 63 lecturers. Data collected were Cronbach alpha statistic and yielded a good reliability coefficient ($\alpha=.81$).

Participants, Inclusion and Exclusion Criteria

93 university academic staff members, (males=49) and females=44) in 2 Federal universities who report that stress interferes with their daily life (self-reported level of stress symptoms above a set cutoff) will participate in the study. All the 125 potential participants who responded to the invitation to participate in the study are screened for eligibility against inclusion criteria set by the researchers. Inclusion criteria include: i) the participant must score up to 3-5 in the Single-Item Measure of Stress Symptoms, showing moderate to high-stress level; ii) participant has not been diagnosed of any major psychological disorders, such as depression or anxiety disorders; iii) Participant is not having any chronic medical cases or terminal illnesses; iv) participant is willing to submit personal contacts and phone numbers; v) Participants signed a written consent that he/she will be available for a period of 2 hours a day in a week for the intensive intervention. Potential participants who did not meet the criteria were excluded from the research.

Recruitment and Randomization

At the first stage of the sampling (January 2019 - February 2019), the researchers with four trained research assistants visited the 2 universities for an invitation to participate in the study. The academic staffs were notified of the program via their faculty board meetings as well as the distribution of fliers and bulk SMS. In the fliers and at each awareness visit, the stress associated with work and how it impacts on the health of the workers will be explained. Also, the Y-CBT program and how it can be beneficial to them in their work and well-being will be explained. Thereafter, the Lecturers were invited for the screening exercise. Out of 125 lecturers who volunteered to participate in the program 93 met up with the inclusion and exclusion criteria will participate in the study.

The randomization is done according to a template prepared at the beginning of the study. Potential participants who met all the inclusion criteria will be randomly assigned to Y-CBT group (46 participants) and wait-list control group (47 participants) (see Figure 2) using a sequence allocation software (participants will be

asked to pick 1 envelope containing pressure-sensitive paper labelled with either Y-CBT or WLG-Waitlist Group) from a container. Information about randomization will be concealed from the participants until the intervention is assigned. Two of the research assistants will conduct the randomization. For good communication about the stages of the intervention, the researchers with the help of one of the research assistants will open two WhatsApp chat groups and add the participants according to the groups they are allocated to.

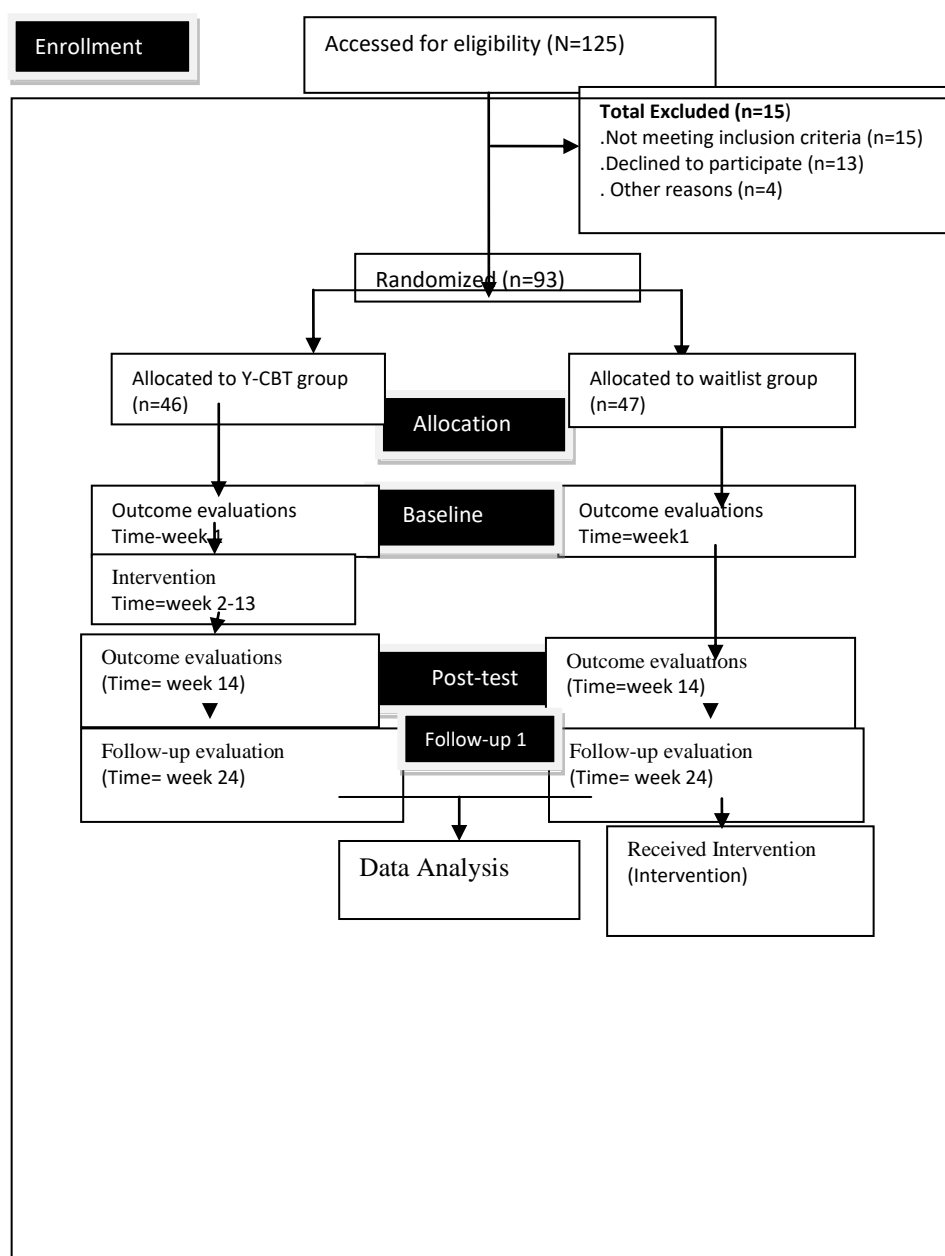


Figure 1: Design/Participants' Flow chart

Thereafter, the baseline evaluation will be conducted for participants in both the Y-CBT group and the waitlist group (WLG) (Time 1), using TSI. The researchers with the participants in the Y-CBT group will schedule for commencement of the intervention.

Participants in the Y-CBT group will receive a 2 hours Y-CBT intervention once a week for a period of 12 weeks (See intervention sessions). To ensure participants' compliance, the researcher will give financial reinforcement to the participants, covering their transport and data bundle every month to enable them to participate in intervention sessions. Two weeks after the end of the intervention, post-test (time 2) data will be collected from both Y-CBT and WLG using TSI. Additional data will be collected from the Y-CBT group using STTS-R. Further, a follow-up meeting will hold at 3 months for updates and the collection of follow-up data (Time 3). Finally, immediately after the 3 months, follow-up assessment, the intervention program will commence for the wait-listed group (July-September, 2019). This will follow the same procedure used for the Y-CBT group.

The Y-CBT intervention will be delivered and moderated by two of the researchers who are experts in the CBT and Yoga, in collaboration with four research assistants who are 2 experts in occupational therapy). All the research assistants will be remunerated by the researchers.

Reminder messages will be 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 will be compared to that from the WLC group. All changes in the procedure and data analyses will be communicated at the in the main manuscript.

Intervention

A yoga-cognitive behavioural therapy program manual developed by two of the researchers in collaboration with two experts (one in CBT and the other in Yoga) will be used for this study. In developing the manual, CBT strategies are blended with after-session Yoga exercises. The CBT sessions are based on the "ABCDE" model (Antecedent/Activating event, Beliefs, Consequences, Disputing, and Effective 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: use ABCDE-CBT group therapeutic model in "disputing", challenging and questioning work-related irrational and dysfunctional beliefs and to replace them with rather helpful and functional beliefs; ^[20, 82] use yoga to reduce the physiological symptoms of stress and help the participants out of the vicious circle of negative thoughts through Yoga "Victory Meditation," affirmations and physical exercises.^[44] This framework helps provide a targeted mind/body approach to stress perceptions, reactions, and symptoms.

The ABCDE formed the basis of explaining the links between activating (A) events associated with a teaching job and promotion, dysfunctional thoughts, beliefs or cognitions arising from those events (B); the emotional and behavioural consequences of the beliefs (C). ^[82] Activating event (A) in lecturing in the university could include handling students' behavioural problems, extra work-load, publication challenges, personal experiences; the belief (B) is the interpretation and cognitive imagery formed due to "A". Such cognition about the event (B) elicits a consequence/effect (C) for the teacher, which may be adaptive or maladaptive. The maladaptive consequences may include anxiety, depression and stress symptomatology. Then, disputation techniques (D) are used to eliminate the maladaptive, dysfunctional and self-limiting beliefs and cognitions. ^[83] Disputation involves challenging and comparing the maladaptive thoughts with more adaptive ones. Ellis ^[84] 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 formed the basis of activities throughout the intervention (See table 2).

Yoga complementary approaches including after-session physical/posture exercise, breathing and meditation practices. The interaction between cognitions, emotions and physical symptoms are highlighted and skills are expected to reduce the incongruity between sensation and perception. Traditional Yoga (asanas, breathing exercises, and meditation) exercises will be used in maintaining physical, mental and emotional well-being. The traditional Yoga used in this study is appropriate for beginners, given that it is mild and does not demand too much effort. The Yoga intervention is meant to help participants understand and appreciate the interplay between their bodily sensations and emotional feelings. Ten different asanas poses will be used, which are Tadasana (Mountain pose); Vrikshasana (Tree Pose); Adho Mukho Svanasana (Downward Facing Dog Pose); Trikonasana (Triangle Pose); Kursiasana(Chair Pose); Naukasana (Boat Pose); Bhujangasana (Cobra Pose); Paschimottanasana; Child's Pose and Sukhasna.^[85]

Breathing exercises will focus 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 will involve getting quiet, calm, and focused; mind slows down, relaxation, and staying positive by focusing on something that brings peace to mind as well as choosing to let go all the negative thoughts that interfere with health. Meditation also helps one become more mindful of mind and body.

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.

Table 2: Summary of the Y-CBY intervention program.

Week/Sessions		Activities	Psychological mechanisms
Week1	Introduction and Baseline testing	Establishing an alliance with the participants. Setting confidentiality rules. Collection of baseline data on the job-stress 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 stress. The module is designed to help participants approach each of the problems by explaining them using the ADCDE framework. Use the CBT stress model to explain stressors. Lead participants to understand the CBT and Yoga and how they can work together to complement each other in managing stress. Explaining the yoga exercises that will be used in the study.	Problem formulation/ identification, discussion, clarification
Week 3	Intervention 1	Help participants to identify and refute unhelpful beliefs and orientations about their job	Disputation;

		which constitute stress. This was done by listing irrational beliefs that follow unfavourable experiences and encouraging rational beliefs and thoughts. Coaching was also geared toward reducing stress. Techniques described in the intervention program were strictly adhered to. The yoga exercise session was taken for 40minutes 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	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 40 minutes 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. 40 minutes 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 stress management 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; humour 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.

14 th Week	Post-test evaluation	Conduction post-test measurement.	Testing
3month s	Follow-up assessment	Conducting the follow-up after three months of post-test	Testing

III. Program implementation, Analysis and Discussion

Four research assistants will receive 4 days skills training for the research. The training will be facilitated by the researchers. The 4-day skills training workshop will comprise basic CBT principles for stress, introduction to Yoga exercises and training on how to conduct the pre-post assessments.

Data will be collected using two instruments as stated earlier. Data will be coded in an entry form and entered into the data management software (SPSS, version 24). Participant demographic characteristics will be described using means, standard deviations and percentage. Baseline data will be analyzed using t-test statistics. A 2-way analysis of variance (ANOVA) with repeated measures will be used to compare baseline, post-intervention, and follow-up data. Partial Eta squared will be used to report the effect size of the intervention on the dependent measure's dimensions. A paired sample t-test will be used to determine the difference in participants' ratings across Time 1 and 2, as well as Time 2 and 3. Further, 2 x 3 repeated measures Analysis of variance (ANOVA) statistics will be conducted to find out the interaction effects of group x Time on the study variable. Statistical Package for Social Sciences (SPSS) version 24.0 and Microsoft Excel will be used for data processing and analyses. The results will be presented in tables and charts. Statistical significance will be defined as a p-value < .05.

Management intervention approaches to stress are important for the total well-being of university teachers. The present study will provide information about the efficacy of Y-CBT interventions for stressed University teachers. The intervention if found effective could be used for large-scale implementation in occupational health improvement. The study extends previous studies on CBT for stress management by developing an integrative framework of yoga and CBT to help teachers manage job stress effectively. The intervention may be cost-effective and timely given the contemporary heightened stress associated with teaching in the university. In the present study, psychometrically valuable measures will be used with randomized controlled trial design. The intervention will be studied in conditions that are in resemblance to real-life implementation.

Incorporating implementation strategies from different theoretical foundations to better understand links between mechanisms which can be embattled to defeat stress is a strength, leading to a more wholesome and global implementation approach. Complementing CBT with Yoga implementation for stress in a non-clinical setting provides a new way to address organizational challenges associated with stress.

The outcome of this study will provide insight into how Y-CBT knowledge and skills could reduce stress among teachers who work under highly demanding occupational demands. Appreciating the mechanisms of stress reduction through Y-CBT implementation strategies will inform more research and implementation in different settings for improved mental and physical. Provisions, for ancillary and post-trial care, and compensation will be made to those who will be waitlisted.

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