


# Efficacy of rational emotive behavior therapy for the improvement of knowledge and risk perception of hypertension among university lecturers in South East Nigeria

## REBT for university lecturers' hypertension improvement

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### Abstract

**Background:** This study determined the effectiveness of a rational emotive behavioral therapy (REBT) intervention on knowledge of risks of hypertension among university lecturers in South-east geopolitical zone of Nigeria.

**Methods:** The study used a group randomized controlled trial design to group the participants into treatment group and a waiting-list control group and the hypertension knowledge questionnaire and the Perceived Risks of Hypertension Questionnaire to collect a pretest, posttest, and follow-up data of this study. The sample of the study was 84 university lecturers in public universities in Southeast Nigeria (University of Nigeria, Nsukka, Enugu State, Nnamdi Azikiwe University, Awka, Anambra State) who satisfies the requirements to participate in the study. The study lasted for 10 weeks. The data collected for the study were analyzed using repeated measures ANOVA and *t* test statistics.

**Results:** The findings of this study were that REBT health educational intervention effectively increased the education foundation and business education lecturers' knowledge and perceived risk of hypertension compared to participants in waitlist group. Lastly, the outcomes of the follow-up measures indicate that the increased knowledge and perceived risks of hypertension acquired during the training program was sustained by the treatment group one month after the end of program.

**Conclusion:** The REBT health educational intervention program could be utilized to increase knowledge and perceived risks of hypertension among university lecturers in public universities in Southeast Nigeria.

**Abbreviations:** HKQ = hypertension knowledge questionnaire, PRHQ = hypertension risk perception questionnaire, REBT = rational emotive behavioral therapy.

**Keywords:** behavioral, emotive, hypertension knowledge, hypertension risk perception, rational, REBT, universities, university lecturers

## 1. Introduction

Medically, the term hypertension refers to a blood pressure of 140/90 (mm Hg) and above. It is a medical disorder of high blood pressure established after two readings on distinct occasions.<sup>[1]</sup> The World Health Organization<sup>[1]</sup> noted that hypertension is associated with the manifestation of a

chronic rising of systemic arterial pressure beyond a threshold value of  $\geq 140$  mm Hg and/or diastolic blood pressure of  $\geq 90$  mm Hg which is expressed as systolic blood pressure. Hypertension is broadly classified into two: primary or essential (idiopathic) and secondary. Authors are in agreement that the primary hypertension is inherent in human genetic, and sometimes develops because of interplay among the genetic,

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socioeconomic, and environmental, behavioral factors.<sup>[2]</sup> Previous studies revealed that the primary hypertension accounts for over 90% to 95% of hypertension cases diagnosed.<sup>[3]</sup> On the other hand, the secondary hypertension occurs as a result of endocrine, renal, and cardiovascular problems.<sup>[4]</sup> Existing literature has also shown that high blood pressure is asymptomatic and is often ascribed to severe health challenges such as cardiovascular disease, cognitive decline, congestive heart break/failure, renal disorder or failure, stroke, dementia, and mortality.

Several studies have established that hypertension is one of the major health problems of the 21st century. Globally, it was estimated that 40% of adults' population aged 25 or above have hypertension, with a steady projected increase from 600 million in 1980 to 1 billion adults in 2008.<sup>[5]</sup> Authors have also predicted that by the year 2025, about 1.5 billion cases of hypertension will be recorded if drastic control measures are not taken to rescue the situation.<sup>[5]</sup> There is increasing evidence in literature that in Nigeria the rate of hypertension ranges between 8% to 46% with about 27.3% in average. For instance, Ajayi et al<sup>[6]</sup> found that hypertension is the most recognized non-communicable ailment in Nigeria's and its cases account for over 25% of clinic emergency and clinical admissions every year. It has also been projected that cases of high blood pressure might increase to 39.1 million cases by 2030 in Nigeria.<sup>[7]</sup> This projection indicates that it is spreading at an alarmingly fast pace especially in African countries.<sup>[8]</sup> The more worrisome aspect of the problem is that two thirds of the world hypertension patients live in developing countries<sup>[9]</sup> like Nigeria where inadequate health services exist and hypertension status is not diagnosed, treated and controlled. Research evidence showed that 57 million able body Nigerians were hypertensive with many still undiagnosed.<sup>[10]</sup> A study conducted in the study area by Ulasi et al<sup>[10]</sup> put the prevalence of hypertension among the adults in Enugu State at 42.2% with 46.3% male and 37.7% females. Another study in a rural community in Eastern Nigeria by Oga and Rayner<sup>[11]</sup> indicated that the prevalence of hypertension was as high as 46.4%. In a similar study in the same study area by Onwubere et al<sup>[12]</sup> found out that out of a total of 858 individuals made up of 247 (28.8%) males and 611 (71.2%) females that took part in the study, 398 (46.4%) subjects were found as having hypertension and the prevalence is even higher among lecturers when compared to other professionals.<sup>[13]</sup>

Lecturers are the academic staff who have undergone both professional and pedagogical trainings and have acquired a minimum of Master's degree in their specific discipline.<sup>[14]</sup> They are subject experts charged with the responsibility of designing, developing, and delivering academic and instructional lessons using diverse strategies, methods, and learning platforms.<sup>[15]</sup> The lecturers have the mandate to impart skills, knowledge, and attitude to students at the university or other tertiary institutions. Most of the lecturers in the Departments of Educational Foundation and Business Education are faced with series of academic stressors due to so many social, environmental, and behavioural factors from the academic milieu.<sup>[16]</sup> Some of the stressors stem from their core academic activities such as development of course materials, planning lessons, and organizing of academic curricula. They also experience stress through the setting of quizzes and examinations and grading them as well as supervision of the students' projects and theses. Similarly, the lecturers carry out research and engage in fieldworks, process applications when necessary, and attend conferences, interviews, and meetings. They prepare and deliver lectures in workshops and seminars. All these stressors influence both their reasoning, and relationship with people.<sup>[16]</sup> There is agreement among the authors that the teaching profession is a very stressful career because of heightened psychosocial stressors at the workplace.<sup>[17]</sup> For instance, Oshineye et al<sup>[17]</sup> found that lecturers are always engrossed with volumes of work which extract a lot of energies out of them and put pressures on their

health. Most of the lecturers do not have quality time to care for themselves both in the office and at home due to excess academic workloads. Lecturers in Education Foundation and Business Education programmes are vulnerable to high academic stress and always experience high traumatic stresses and mental dejections which increases the chances of them developing hypertension.<sup>[18]</sup> Other causation factors of hypertension to the lecturers include poor remuneration, poor condition of services, and lack of administrative support.<sup>[19]</sup>

A substantial number of studies have also proven that there is a relationship among occupational stressors, poor remuneration and fringed benefits, chronic carrier strain, and elevation of blood pressure.<sup>[20]</sup> Similarly, authors agree that lecturers who are exposed to the above traumatic events with unbearable workloads have the tendencies of developing general mental health and hypertensive problems. Such victims might be vulnerable to dehydration, severe psychosocial stress, depression, and acute worries. At the extreme cases, they might experience low job and carrier satisfaction, and may give up their job or embark on a perpetual absenteeism from work because of health-related challenges like hypertension.<sup>[21]</sup> Previous studies established that mentally stressed lecturers suffer unimaginable health riots resulting to chronic psychological disruptions such as anxiety, outrageous and excessive anger, frustration, and irritability.<sup>[22]</sup> These emotional states are concomitant with high sympathetic tone and high blood pressure. Authors argued that there is relationship between psychological anxiety, hypertension, and development of numerous cardiovascular maladies, like myocardial infarction, stroke, and coronary artery disease.<sup>[23]</sup> Galetta et al<sup>[24]</sup> found that chronic high blood pressure targets and affects several body organs and leads to blood pressure elevation, with some victims having a deteriorated or absent nocturnal dip in blood pressure. The latter are considered as having an advanced/higher risk for cerebrovascular and cardiovascular events.<sup>[25]</sup>

Again, several research findings have also proven that hypertension affects the lecturers' education career outputs, family, personal, and social lives and has left several captives incapacitated for life and have resulted to the death of many.<sup>[20]</sup> It has also been proven that hypertension is the leading cause of Target Organ Damage like blindness, kidney failure, and coronary artery diseases.<sup>[26]</sup> It can prevent the victim from achieving his/her life goals through incapacitation, death, rejection, loneliness, poor health conditions, absenteeism from work, poor performance, among other problems.<sup>[27]</sup> Van de Vijver et al<sup>[27]</sup> noted that the cost of caring and treating persons with hypertension and its complications for example cardiovascular disease, ischemic heart disease and congestive heart failure, indirect costs such as money lost when paying for catastrophic healthcare expenditures is very high. The author further added that rehabilitation of stroke patient, or dialysis following renal failure constitute heavy economic burden for the individual, family, university, and the country at large.

It is necessary to note that the chances of developing hypertension by the lecturers of Education Foundation and Business Education are very high because of the equipment and facilities they use in the instructional delivery and straining of voice when teaching overcrowded classes as well as extra-curricular activities like reading of proposal and seminar booklets among others.<sup>[28,29]</sup> This is congruent with the findings of Barua et al<sup>[30]</sup> who conducted a study on the prevalence of hypertension and its risk factors among university lecturers. The result showed that 52% of the sampled university lecturers who were studied were hypertensive, 46.5% were overweight, 52.3% were taking extra salt, 77.1% lived in nuclear family, and 73.7% had mental distress. Also, the research findings indicate that 98.5% of the sampled lecturers are either hypertensive or at the risk of developing hypertensive because of overweight which is one of the risk factors for hypertension. Similar research findings by Uwah et al<sup>[31]</sup> revealed that out of the 393 subjects assessed, a staggering 62.8% were found to have blood pressure

(BP) above 140/90 mm Hg, which exceeds the reported average global prevalence for hypertension. From the findings of these scholars, it appears that the Nigerian educational system is at a serious risk of quality productive university lecturers due to their exposure to risk of developing hypertension from various sources such as unhealthy dietary habits, behavioral lifestyles, misconceptions, among others. It is an understatement that the increasing prevalence of hypertension among the teaching profession represents a substantial public educational and health problem with associated economic and social impacts<sup>[32]</sup> and if the problem is not urgently addressed, it will have the potential to overwhelm health care and university systems<sup>[33]</sup> and destroy the economy of the Southeast zone.

In spite of the threatening effects of the high blood pressure, knowledge of how it is developed and its preventive mechanisms may go a long way to comb the menace. Ambaw et al<sup>[34]</sup> postulated that one of the ways of controlling of hypertension is having sound knowledge about it and also understanding the risk factors for its development. It has been established in the literature that more knowledge of the causes of hypertension is associated with healthier and careful adherence to the antihypertensive treatments and adoption of a better healthy lifestyle.<sup>[35]</sup> As at the time of this study, there is low knowledge and risk perception of the danger of hypertension by the study participants. Knowledge, they say is power. The unexpected and continued high prevalence of hypertension lecturers in Southeast, Nigeria has been attributed to low knowledge and poor perception of the risks of hypertension.<sup>[12]</sup> It is the opinion of the researchers that if the low knowledge and risk perception of ways through which hypertension could developed is improved through training, it will go a long way to save lives and curb the rise in the prevalence of hypertension and possibly address the hypertensive challenges faced by several lecturers.

It is expedient to note that several efforts have been made to control the spread of hypertension by several organizations and governments. For example, in 2007 Canadian Hypertension Education Program was developed and it was recommended as a stress reduction intervention for normotensive and hypertensive patients.<sup>[36]</sup> Despite effort and recommendations of these bodies, recent studies indicated that knowledge of risk factors, symptoms, prevention, management, and complications of hypertension,<sup>[13,37]</sup> may be lacking among lecturers in Nigeria. Also, in Nigeria, pharmacotherapy which is the mainstay of hypertensive therapy had made several attempts to fight against the hypertension challenges, but research showed that they have not significantly impacted on hypertension treatment and control in the country.<sup>[32,38,39]</sup> Again, to address the hypertensive problem, Chobanian et al<sup>[40]</sup> and <sup>[41]</sup> recommend lifestyle modifications for all patients with hypertension (blood pressure of 140/90 mm Hg or higher) or pre-hypertension (blood pressure of 120/80 to 139/89 mm Hg). In spite of these efforts, it seems that the struggles of both the national and international governmental agencies and the resources employed to combat the spread of hypertension in the developing countries like Nigeria is still abortive and fruitless. Several research studies indicate that their objectives are far from being achieved due to gap between guidelines recommendations and the skills of the hypertension care givers.<sup>[42]</sup> Therefore, it is imperially necessary to adopt a rational emotive behavior therapy (REBT) health educational training intervention program to help university lecturers in Nigeria and Southeast in particular to acquire the requisite knowledge necessary to improve their knowledge and perceived risks of hypertension and risk factors.

The REBT health educational intervention was an adaptation of the REBT, propounded by Ellis in 1955.<sup>[43,44]</sup> It is an intervention program that combines cognitive restructuring with behavioral techniques in order to reduce self-defeating emotions and behaviors of individuals,<sup>[43,45]</sup> and it is used as an effective therapeutic intervention to treat patients with lifestyles and behavioral problems including psychosocial related problems

caused by stress, anxiety, depression etc. which, according to,<sup>[20]</sup> increase the risk of developing hypertension. There is growing evidence from recent studies that various scholars have adopted and applied the theory and principle of REBT intervention in stress – reduction management,<sup>[46,47]</sup> learning new behaviors,<sup>[21,48]</sup> increase level of awareness and risk perceptions of infections and diseases,<sup>[49]</sup> as a counseling tool,<sup>[50,51]</sup> among other applications. There is evidence also that REBT program has been used to effectively improve knowledge of hypertension risk factors and complications<sup>[52,53]</sup> and treatment of obesity, chronic pain, sleep problems, and hypertension.<sup>[54]</sup> Similarly, the study by Khan et al<sup>[55]</sup> and Sharma and Majumdar<sup>[56]</sup> show that individual dietary habit and lifestyle make them vulnerable to developing hypertension disease and related complications. The findings of these scholars indicate the way people think, feel and behave including their dietary choices make them vulnerable to behavioral and psychosocial problems. Hence an effective health educational REBT therapeutic intervention for hypertension prevention must address the behavioral, cognitive and emotional wellbeing of the patient.<sup>[57,58]</sup> Studies<sup>[30,59]</sup> show that the REBT intervention program that incorporates the cognitive, behavioral skills training is more effective in improving hypertension knowledge and risk perceptions.

The REBT health educational intervention program is a comprehensive health psycho-educational program that incorporates cognitive restructuring, reeducation and knowledge of hypertension risk factors, treatment and control. The program is meant to help university lecturers improve their hypertension knowledge, acquire the requisite behavioral and cognitive skills to alter or modify erroneous thought, emotions and behaviors and overcome their irrational beliefs and misconceptions that could hinder them from acquiring and retaining the new information about hypertension knowledge, risk behaviors, prevention and lifestyle modification principles. The REBT health educational instruction is also meant to help university lecturers learn and internalize the lifestyle modification behaviors and modify high risk lifestyles and behaviors that are detrimental to their health and wellbeing. The intervention will also provide them with the requisite skills to modify already held dysfunctional cognitions and harmful patterns of behavior and lifestyles. From the views of these scholars,<sup>[30,31,59]</sup> effective REBT intervention treatment package is envisaged to help university lecturers to therapeutically dispute irrational beliefs indicated by their unhealthy behavioral lifestyles and attain adaptive and/or better healthy behaviors based on rational adaption/learning.

From the REBT perspective, irrational beliefs may increase worker's vulnerability to behavioral and psychosocial problems which invariably makes them vulnerable to hypertension and other related complications. This REBT instruction was short-term, problem-focused psychosocial intervention based on the models of Nkosi and Wright<sup>[60]</sup> and Steyn<sup>[61]</sup> to teach university lecturers high risk dietary habits, lifestyles modification and coping strategies to achieve and maintain the required behavioral change. According to Ghembaza et al<sup>[54]</sup> the strategy will aid the recipients achieve self-management of the cognitive and behavioral coping strategies in their daily life. The crux of this research and supported by the views of scholars like<sup>[23,62]</sup> is that hypertensive individuals in the public sector have little knowledge regarding the complications of hypertension, the consequences of eating unhealthy foods, are uninformed of healthy dietary practices for hypertensive individuals, and are unaware of their own blood pressure status. The REBT therapeutic instructional strategies packaged in this study were meant to address these problems and fill the knowledge gap among university lecturers in Southeast Nigeria through exposure to formal lecture, hand out, instructional materials and charts, group discussions, home assignments, and role-playing techniques. It is expected that after the treatment, university lecturers will learn to identify any dysfunctional assumptions and misconceptions in their cognitions, and how to challenge irrational beliefs in their culture

and tradition<sup>[62]</sup> and to increase their hypertension knowledge and motivation to reduce unhealthy problematic lifestyle behaviors. The prescriptive nature of the treatment makes it easy for individuals to readily apply the knowledge and techniques long after therapy ends, thereby making it highly efficient for long term behavior change<sup>[62]</sup>

Despite the efficacy and wide application of the REBT therapeutic treatment in developed countries, to our knowledge, only a few studies seem to have employed the REBT approach in reducing stress, burnout symptoms and distress in Nigerian sample. A Nigerian study employed the rational-emotive behavior therapy approach to assist individuals in university setting to significantly reduce burnout symptoms.<sup>[60,61]</sup> Other Nigerian studies have used the rational-emotive behavior therapy REBT approach to reduce job-related stress of lecturers in vocational and technical university settings.<sup>[30,31]</sup> However, not much is known about any REBT therapeutic study in Nigeria which aimed to help university lecturers in Nigeria improve their knowledge and risk perception of hypertension, using the theory and principle of REBT, so as address the increasing high prevalence of hypertension among university lecturers in Southeast geo-political zone. Outcomes of previous studies are indications that Nigerian university lecturers have little or no knowledge about hypertension and associated complications, the behavioral, psychological, cognitive and emotional risk factors and consequences of indulging in unhealthy lifestyles and their association with developing hypertension and related complications in their daily life.<sup>[22,23]</sup>

The lecturers that have hypertension and related complication could be assisted through exposure to the REBT health educational hypertension management program and the delivery of the intervention program is also informed by the notion that hypertension prevention efforts could be most effective if its prevention programs utilize strategies, which combines cognitive and behavioral skills training.<sup>[30,31,59–61]</sup> Therefore, the objective of this study was to examine the efficacy of a REBT health educational intervention program on knowledge and perceived risks of hypertension among university lecturers in Southeast Nigeria. To guide the study, the researchers hypothesized that REBT intervention would lead to an increase in knowledge and perceived risks of hypertension among the university lecturers exposed to a REBT intervention treatment group in comparison to a waiting-list control group.

## 2. Methods

### 2.1. Ethical approval

The Research Ethics Committees of the Faculties of Education and Vocational and Technical Education, University of Nigeria Nsukka approved this research. The authors also adhered strictly to the ethical standard for carrying out research with human participants as stated by the American Psychological Association and also complied with the ethical considerations as upheld by the World Medical Association's Declaration of Helsinki.<sup>[63,64]</sup>

### 2.2. Design of the study

The researchers adopted a pretest-posttest randomized control group design in this study. A repeated-measures analysis of variance was used for the analysis of data. This design enabled the researchers to determine if the studied groups (treatment and waitlist) are equivalent, and also to ensure that they have similar hypertensive conditions at time 1 (i.e., baseline 1) prior the administration of the intervention [Marczyk, 2915]. The design also helped the researchers to establish if there was any improvement in the treatment group when compared with the waitlist group after the intervention at time 2. Partial eta

squared ( $\eta^2$ ) and adjusted  $\Delta R^2$  were reported in order to determine the effect size of the rational-emotive health educational hypertension management intervention. The confidence intervals of results were also reported. Time points were entered as within-subject variables, whereas group was entered as between-subject factors. Chi-square and t-test analysis were conducted in regard to the participants' demographic variables. All results were considered significant at  $P \leq .05$ .

Our test for violation of assumptions showed that the Mauchly's test of Sphericity was not statistically significant (Mauchly's  $W = 0.982$ ,  $P = .471$ ), thus, the assumption of Sphericity was met. Also, test for homogeneity of variance using Levene's test was not statistically significant for the pretest, posttest and follow up intervention scores:  $F(1,82) = 0.102$ ,  $P = .751$ ,  $F(1,82) = 2.025$ ,  $P = .141$ , and  $F(1,82) = 2.959$ ,  $P = .089$  respectively indicating that the assumption of homogeneity of variance was also met in the REBT interventions. In addition, the test for data normality was tested using the Shapiro-Wilk test of normality. The result was not significant for both intervention scores: pretest, posttest and follow up as follows: Pretest treatment group (Shapiro-Wilk = 0.951,  $P = .071$ ) and waiting list group (Shapiro-Wilk = 0.853,  $P = .081$ ). Posttest treatment group (Shapiro-Wilk = 0.954,  $P = .093$ ) and waiting list group (Shapiro-Wilk = 0.957,  $P = .118$ ) and for follow up test (Shapiro-Wilk = 0.949,  $P = .059$ ) and waiting list group (Shapiro-Wilk = 0.952,  $P = .079$ ). This showed that the data was normally distributed. Also, there were no outliers and no missing values in the data across the groups. All statistical data were entered and analyzed using IBM SPSS, version 26.

### 2.3. Determination of the study population sample sizes using GPower analysis

The participants in this study were 84 lecturers from the Departments of Educational Foundations and Business Education, University of Nigeria Nsukka, Enugu State, and Nnamdi Azikiwe University, Awka, Anambra State who were working in two public universities in Southeast Nigeria during the 2018/2019 academic year (see Fig. 1). Participants were recruited during university visits between October 2018 and May 2019 by the authors. The GPower 3.1 software was used to ascertain the adequacy of the sample size (Faul et al<sup>[69]</sup>). On the selection of participants for the study, only the lecturers who met the following criteria were selected: employed as full time universities lecturers in the universities studied; signed consent form indicating his/her availability throughout the period of the study and readily accessible throughout the time of the research; an approval letter from his/her Head of Department granting him/her permission to participate in the research and will not be involved in any other hypertension intervention therapy during the duration of the study period. Using Random Allocation Software (Saghaei<sup>[70]</sup>) we assigned the lecturers to either treatment group ( $n = 42$ ); and no-intervention control group ( $n = 42$ ) (see Fig. 1).

In addition, the participants were divided into ten groups of 8 participants per group through simple random sampling technique of picking numbers enclosed in a paper without replacement until all the participants were grouped. The participants that picked one belong to group 1, those that picked two belong to group 2, in that order till the eight groups were formed. The aim was to eliminate bias and partiality in the grouping selection process.

### 2.4. Measures

Three sets of instruments were used to elicit data from the participants. The instruments include Hypertension knowledge questionnaire (HKQ-21), Hypertension risk perception questionnaire (PRHQ), and Demographic questionnaire.

## CONSORT 2010 Flow Diagram

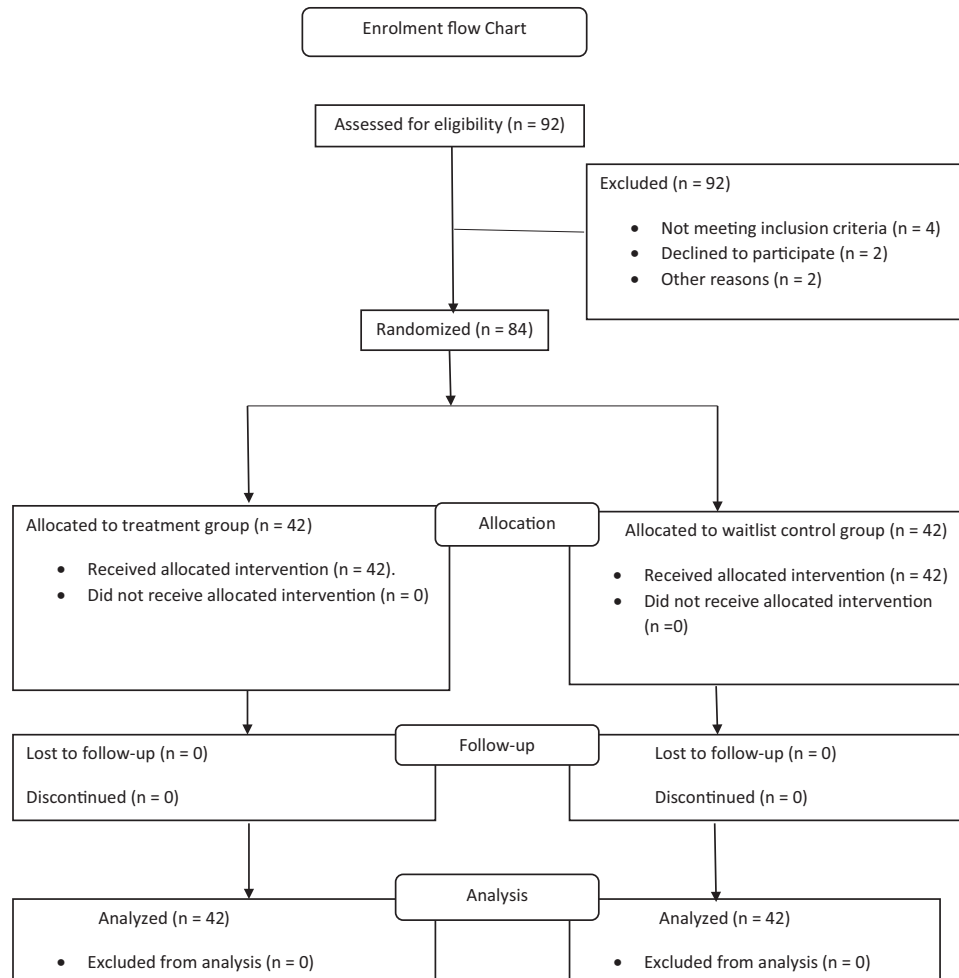


Figure 1. Participants' eligibility benchmark.

**2.4.1. Hypertension knowledge questionnaire (HKQ-21).** The HKQ-21 is a 21-item self-administered test questionnaire developed and validated by Han et al to measure individual's level of knowledge of Hypertension and related complications.<sup>[67]</sup> In the HKQ, participants were asked to indicate their level of knowledge of hypertension by responding true or false in items 1 to 12 and select from multiple choice in items 14 to 21. It is scored on 2-score statements, namely correct answer, incorrect answer. The HKQ-21 scores are calculated by counting the number of items with correct responses with possible range of 0 to 21. It yields a single score, with higher scores indicating greater hypertension-related knowledge. The HKQ-21 has been found to have good reliability and validity.<sup>[66]</sup> In this study, the HKQ--21 has Cronbach alpha internal reliability coefficient of ( $R = 0.77$ ).

**2.4.2. Hypertension risk perception questionnaire.** The PRHQ is a 26-item self-report questionnaire adapted from ABCD risk questionnaire created by Woringer et al The instrument includes items measuring cognitive assessments of risk, intuitive assessments, and salience of risk.<sup>[68]</sup> The ABCD risk questionnaire provides an inclusive assessment of perceived risk of hypertension and related complications compared to many existing scales for assessing hypertension risk perception. The ABCD questionnaire is rated on a true or false scale for items 1 to 8 and on 5-point scale of varying responses on item 9 to 26 and is usually summed up to yield an overall PRHS.

**2.4.3. REBT educational training manual.** The REBT educational training manual was an adaptation of the hearts technical package for cardiovascular disease management in primary health care: healthy lifestyle counseling<sup>[69]</sup> and the cognitive, emotive, and behavioral techniques used by Digiuseppe.<sup>[70]</sup> The researchers found the content, learning experiences and exercises in the hearts technical package on hypertension disease management and the techniques used by Corey suitable to achieve the objectives of the REBT health educational intervention program. This health educational training manual was a model health education promotion and hypertension disease prevention intervention program designed to help university lecturers improve in their knowledge of hypertension and to help the participants learn what is hypertension, various sources of developing hypertension, diseases associated with hypertension, various ways of preventing and controlling the disease, REBT techniques of identifying and disputing irrational beliefs and the adaptation and demonstration of behavioral, cognitive and emotive skills to live healthy life. It was expected that at the end of the program, participants should be made to know how what they eat, think, feel and behave and their lifestyles and habits affect their health and chances of developing hypertension and related complications. Similarly, the participants should be taught to know the dangers of indulging in unhealthy diet, insufficient physical activity, and harmful use of alcohol and tobacco as these are major risk factors for hypertension and related complications. The program training manual comprises

8 modules with exercises and assignment including hand out, instructional materials and charts, teaching aids and focused group discussion and projects and the handout was given to the participants for reference.

**2.4.4. Demographic questionnaire.** The demographic questionnaire was used to obtain participant's demographic information, which includes, gender, age, marital status, teaching experience, highest qualification obtained and location.

## 2.5. Study procedure

**2.5.1. Preliminary meetings.** The intervention was administered by the researchers with the help of seven professionals consisting of two psychologists, three qualified midwiferies, and two trained clinical REBT experts with cognate experience in emergency psychology. The researchers and the team of experts had 1-week preliminary meetings to deliberate on the procedures, administration rules, and regulations that guided the treatment procedures. Again, the team visited three universities located in the study area and recruited participants (university lecturers in Southeast Nigeria) in the knowledge and perceived risk of hypertension intervention. The aim of the visit was to discuss and to explain to the lecturers and the Heads of Departments the objectives of the study, terms of consent form and qualification criteria to participate in the program and to administer and retrieve dully signed informed consents from the participants.

Again, we conducted a hypertension sensitization and orientation exercise to expose lecturers to the causes of hypertension and the need to know their status. After the sensitization exercise informed consent form was issued out to the participants which they filled and turned in. Thus, a total of 92 university lecturers from the Departments of Education Foundation and Business Education expressed willingness to participate in the program. Secondly, we determined the lecturers' hypertension status using hypertension knowledge and perceived risk of hypertension questionnaire. Out of the 92 lecturers that expressed willingness to participate, 84 of them met the study inclusionary criteria and were shortlisted to participate in the study (see Fig. 1). They were randomized to the treatment group ( $n = 42$  [50.0%]) and the waitlist control group ( $n = 42$  [50.0%]) respectively. We employed a simple randomization process by offering all the participants equal chances to pick an inscription labeled "1" or "2." Those who choose 1 were enrolled into the treatment group while other who picked 2 were randomized to the waitlist control group. The lecturers were assured of the confidentiality of the information they provided in the course of the program.

**2.5.2. Experimental treatment using REBT health educational training.** The REBT hypertension knowledge training is a 2-hour rational-emotive psycho educational class session that was held twice per a week for a duration of 10 weeks with biweekly meetings at the end of monthly sessions. Before the treatment process, we administered a pretest (Time 1) to all the participants to determine their baseline characteristics. After the intervention, a posttest (Time 2) was given to ascertain the level of improvement recorded by the participants, while a follow up (Time 3) meeting was conducted four months after the posttest.

**Phase 1:** During the first week of the intervention (Monday and Wednesday), the blood pressure of the participants was measured by the midwiferies. Before checking their blood pressure, each of them was encouraged to sit down in a relaxed mood for about 20 minutes.<sup>[122]</sup> The blood pressure was measured using a mercury manometer and a stethoscope. The purpose of instructing the participants to maintain relaxed positions during the time of blood pressure measurement is to guide as counter and wrong reading of the test instrument (mercury manometer and a

stethoscope). The measurement was carried out for two days due to the number of the participants. As part of the preconscious measures, the participants were asked to shun physical activities that involves muscular straining and taking of caffeine and/or alcoholic beverages throughout the experimental periods.

**Phase 2: Second to fourth week:** This session was held for 120 minutes, and it lasted for six meetings (3 weeks). The first 60 minutes of each meeting was focused on the general teaching on the causes and effects of hypertension. Afterwards, the next 60 minutes was used for group discussion, sharing, and asking of questions on lessons learned, as well as group project work. Thereafter, the researchers gave out training materials to all the participants. They were encouraged to study the materials both at the group meetings and individually at home.

**Phase 3 – Fifth week:** This session was designed to help the participants gain the required knowledge about hypertension. The knowledge includes symptoms, stages of development of hypertension, risk factors, consequences, preventive measures, and diagnosis methods. The intervention was also meant to help the participants acquire requisite cognitive and behavioral skills to alter their already dysfunctional emotions, cognitive and unhealthy behavioral lifestyles, and to adapt new knowledge of coping with their hypertensive condition. This session was followed by small group discussion and question and answer period.

**Phase 4 – Sixth to eighth week:** The researchers employed REBT cognitive techniques such as interviewing, disputing lecturers' irrational beliefs, and misconceptions. The techniques also include use of rational self-statements and reframing to impact the requisite skills and knowledge about hypertension and equipping them with the necessary information to help them dispute their irrational beliefs. To achieve this, we employed REBT exposure therapeutic techniques designed to assist clients in confronting worries, fear, dysfunctional beliefs, trauma, depression, and high-risk stimuli caused by excessive workloads.<sup>[157]</sup> Other aspect of the REBT exposure techniques we adopted is the systematic desensitization of pairing hypertension-inducing memories such as acute worries and its aides-mémoires to body relaxation which oftentimes triggers anxiety, distress, nervousness, and chronic trauma.<sup>[146]</sup> Again, the intervention included vivo exposure to the high blood pressure impending risk factors or activators which leads to emotional stress and high blood pressure.<sup>[173]</sup> Among the risk factors are obesity (overweight), taking extra/excess salt, gluttony or excess eating, lack or low exercising, and sedentary lifestyles among others.<sup>[165]</sup> Furthermore, the participants were exposed to how they can cope with mental state such as fear of contracting other ailments because of the hypertension, how to manage the excess workload both in office and at home, how to manage frustration, anxieties, and nervousness.<sup>[175]</sup>

**Phase five: Ninth to tenth week:** The session focused on the shame-attacking exercises, self-management/activity, relaxation, emotive, and behavioral homework. These activities were aimed at increasing participants' knowledge and risk perception of hypertension and the adaptation of new cognitive behaviors to prevent the prevalence of hypertension and related complications. The participants were also given self-help forms. The self-help form enabled the participants to critically appraise the disputation of their work-related irrational beliefs, emotions and behaviors. At the end of each therapeutic session, participants were given homework assignment, which was to be completed and submitted before the next session starts.

## 3. Results

Data in Table 1 is the demographic characteristics of the 84 university lecturers who participated in the REBT health educational program intervention. Out of the 84 participants, 42 (50%) were randomly selected in the treatment group while the remaining 42 (50%) were placed in the control group. Among

**Table 1**  
**Demographic characteristics of participants.**

Characteristics	Treatment group, N (%)	Control group, N (%)	X <sup>2</sup>	Significance
Gender	42 (50.0%)	42 (50.0%)	0.190	0.827
Male	22 (52.4%)	20 (47.6%)		
Female	20 (47.6%)	22 (52.4%)		
Location			0.778	0.509
Urban	26 (61.9%)	22 (52.4%)		
Rural	16 (38.1%)	20 (47.6%)		
Age			0.508	0.988
≤19.9 yr	6 (14.3%)	8 (19.05%)		
20–29.9 yr	5 (11.9%)	5 (11.9%)		
30–39.9 yr	12 (28.6%)	12 (28.6%)		
40–49.9 yr	10 (23.8%)	8 (19.05%)		
≥50 yr	9 (21.4%)	9 (21.4%)		
Marital status			0.097	0.992
Single	6 (14.3%)	6 (14.3%)		
Married	25 (59.5%)	24 (57.1%)		
Divorced	5 (11.9%)	5 (11.9%)		
Widow	6 (14.3%)	7 (16.7%)		
Qualification			0.072	1.000
PhD	8 (19.05%)	8 (19.0%)		
MEd	6 (14.3%)	6 (14.3%)		
BEd	12 (28.6%)	13 (31.0%)		
NCE	16 (38.1%)	15 (35.7%)		
Experience			0.630	0.964
0–5 yr	5 (11.9%)	7 (0%)		
6–10 yr	8 (19.05%)	8 (19.05%)		
11–15 yr	15 (35.7%)	13 (31.0%)		
16–20 yr	7 (16.7%)	6 (14.3%)		
21–25 yr	6 (14.3%)	7 (16.7%)		

The participants' demographic characteristics are shown in Table 1.

the 42 participants in the treatment group, 22 (52.4%) were male and 20 (47.6%) were female, while in the control group, 20 (47.6%) were male and 22 (52.4%) female participants, with no statistically significant difference,  $X^2(1) = 0.190$ ,  $P = .663$ . The result also revealed that in the treatment group, 26 (61.9%) of the participants live in Urban area and 16 (38.1%) live in rural areas while 22 (52.4%) participants in the control group live in urban areas and 20 (47.6%) live in rural area, with no statistically significant difference,  $X^2(1) = 0.778$ ,  $P = .378$ . Also the table revealed that among the participants in the treatment group, 6 (14.3%), 5 (11.9%), 12 (28.6%), 10 (23.8%), and 9 (21.4%) of the participants belong to the age bracket of ≤19.9 years, 20 to 29.9 years, 30 to 39.9 years, 40 to 49.9 years, and age ≥50 years old respectively while in the control group, 8 (19.05%), 5 (11.9%), 12 (28.6%), 8 (19.05%), and 9 (21.4%) of the participants were also in the age brackets of ≤19.9 years, 20 to 29.9 years, 30 to 39.9 years, 40 to 49.9 years, and ≥50 years, respectively, with no statistically significant difference,  $X^2(1) = 0.508$ ,  $P = .973$ . In the marital characteristics of participants in the treatment group, 6 (14.3%), 25 (59.5%), 5 (11.9%), and 6 (14.3%) were single, married, divorcees and widows respectively while in the control group, 6 (14.3%) were single, 24 (57.1%) married, 5 (11.9%) divorcees, and 7 (16.7%) widows, with no statistically significant difference,  $X^2(1) = 0.097$ ,  $P = .0992$ . In addition, the table also revealed that the highest qualification possessed by the participants in the treatment group, 8 (19.05%) possessed PhD, 6 (14.3%) MEd, 12 (28.6%) BEd, and 16 (38.1%) NCE certificates while in the Control group, also 8 (19.0%) of the participants have PhD, 6 (14.3%) MEd, 13 (31.0%) BEd, and 15 (35.7%) NCE certificates with no statistically significant difference,  $X^2(1) = 0.072$ ,  $P = .0995$ . Also in the teaching experience of participants in the treatment group, 5 (11.9%), 8 (19.05%), 15 (35.7%), 7 (16.7%), and 6 (14.3%) have teaching experiences of 0 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, and 21 to 25 years respectively while in the control

group, 7 (16.7%) have 0 to 5 years experience, 8 (19.05%) 6 to 10 years, 13 (31.0%) 11 to 15 years, 6 (14.3%) 16 to 20 years, and 7 (16.7%) have acquired 21 to 25 years teaching experience with no statistically significant difference,  $X^2(1) = 0.630$ ,  $P = .0987$ .

Table 2 shows the results of hypertension knowledge and perceived risk of hypertension of university lecturers in Southeast Nigeria, using the HKQ-21 and Hypertension risk perception questionnaire (PRHQ-26), respectively. Table 2 indicates that there was no significant difference between the treatment and waiting-list control groups in the university lecturers initial hypertension knowledge, which was measured using HKQ-21, with  $F(1,82) = 0.026$ ,  $P = .871$ ,  $\eta^2 = 0.0003$ ,  $\Delta R^2 = 0.001$ . The outcome of the hypertension knowledge measure after the REBT health Educational intervention program showed a statistically significant improvement among university lecturers in the treatment group when compared to their counterparts in the waiting-list control group,  $F(1,82) = 385.212$ ,  $P = .000$ ,  $\eta^2 = 0.825$ ,  $\Delta R^2 = 0.822$ . Similarly, the follow-up treatment measure showed that there was also a significant increase in the hypertension knowledge among university lecturers in the treatment group than those in the waiting-list control group,  $F(1,82) = 208.383$ ,  $P = .000$ ,  $\eta^2 = 0.7176$ ,  $\Delta R^2 = 0.716$ . This result indicates that the REBT Health Educational intervention program was effective in increasing the level of hypertension knowledge among university lecturers in Southeast Nigeria.

Table 2 indicates that there was no significant difference between the treatment and waiting-list control groups of perceived risk of hypertension before the hypertension risk perception pretreatment,  $F(1,82) = 0.923$ ,  $P = .0340$ ,  $\eta^2 = 0.011$ ,  $\Delta R^2 = 0.01$ , as measured using the PRHQ-26. The post treatment measure after the REBT health educational intervention program showed a significant difference in the perceived risk of hypertension among university lecturers in the treatment group when compared with those in the waiting-list control group,  $F(1,82) = 2622.635$ ,  $P = .000$ ,  $\eta^2 = 0.9697$ ,  $\Delta R^2 =$

0.968. Furthermore, the follow-up treatment measure showed that there was a significant improvement in the perceived risk of hypertension among university lecturers in the treatment group, compared to their counterparts in the waiting-list control group,  $F(1,82) = 3235.431, P = .000, \eta^2 = 0.9753, \Delta R^2 = 0.972$ . This result indicates that the REBT health educational intervention program was very effective in increasing college teacher's perceived risk of hypertension. Also, Figures 2 and 3 show a graphical presentation of the hypertension knowledge and perceived risk of hypertension time group interaction effects.

### 3.1. Discussion

The purpose of this study was to investigate the efficacy of REBT health educational intervention program on hypertension knowledge and perceived risk of hypertension among university lecturers in Southeast zone of Nigeria. The results of the present study showed that the REBT health educational intervention program was effective in improving the

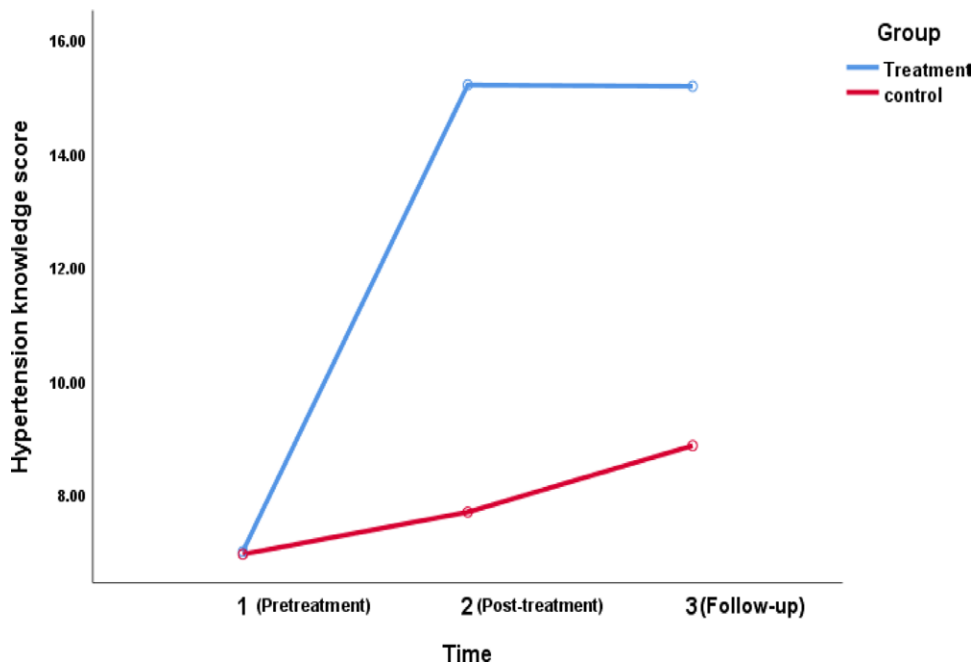
hypertension knowledge and perceived risk of hypertension among university lecturers who were exposed to treatment. Comparison of demographic characteristics of participants in both control and experimental groups before the study revealed that participants of both groups were statistically similar. The results showed no significant difference between the mean score of participants in the HKQ-21 measure of hypertension knowledge and also in the PRHQ-26 measure of Hypertension risk perception. After the treatment, the findings of the study showed a very significant improvement on HKTQ-21 measure of hypertension knowledge mean score in the REBT based treatment group compared to the control group in both the posttest and follow up measures. The posttest mean scores showed improved hypertension knowledge, dietary adjustments, and lifestyle modification practices. It indicates that REBT-based training intervention program improve the hypertension knowledge, assisted them to acquire new behavioral skills good enough to modify and manage their old lifestyles, irrational beliefs, and psychological stressors both in the workplace and at home.

**Table 2**

**Repeated-measures ANOVA showing the effect of REBT health educational intervention program on lecturers' hypertension knowledge and perceived risk of hypertension based on time and group.**

Time	Measure	Group	Mean	SD	F	Sig	$\eta^2$	$\Delta R^2$	95% CI				
1 Pretreatment	HKQ-21	Treatment	7.00	1.34346	0.026	0.871	0.003	0.001	6.5813–7.4187				
		Control	6.95	1.34259					6.5340–7.3708				
	PRHQ-26	Treatment	25.00	1.56174					0.923	0.340	0.011	0.01	24.513–25.4867
		Control	25.33	1.61799									24.829–25.8375
2 Post-treatment	HKQ-21	Treatment	15.191	1.54979	385.2	0.000	0.825	0.822					14.7075–15.67
		Control	7.6905	1.93161									7.0885–8.2924
	PRHQ-26	Treatment	49.286	2.36113					2622.6	0.000	0.9697	0.968	48.5499–50.022
		Control	25.691	1.82781									25.1209–26.260
3 Follow-up	HKQ-21	Treatment	15.167	1.70961	208.38	0.000	0.718	0.716					14.634–15.699
		Control	8.857	2.25855									8.1533–9.5610
	PRHQ-26	Treatment	49.191	1.99069					3235.4	0.000	0.975	0.972	48.570–49.8108
		Control	25.786	1.77428									25.233–26.339

$\Delta R^2$  = adjusted  $R^2$ , CI = confidence interval, degree of freedom (1,82),  $F$  = value from ANOVA test, HKQ-21 = hypertension knowledge questionnaire,  $\eta^2$  = partial eta squared, PRHQ = perceived risk of hypertension questionnaire, SD = standard deviation, Sig. = significance.



**Figure 2.** Graphical presentation of time × graph interaction effect.



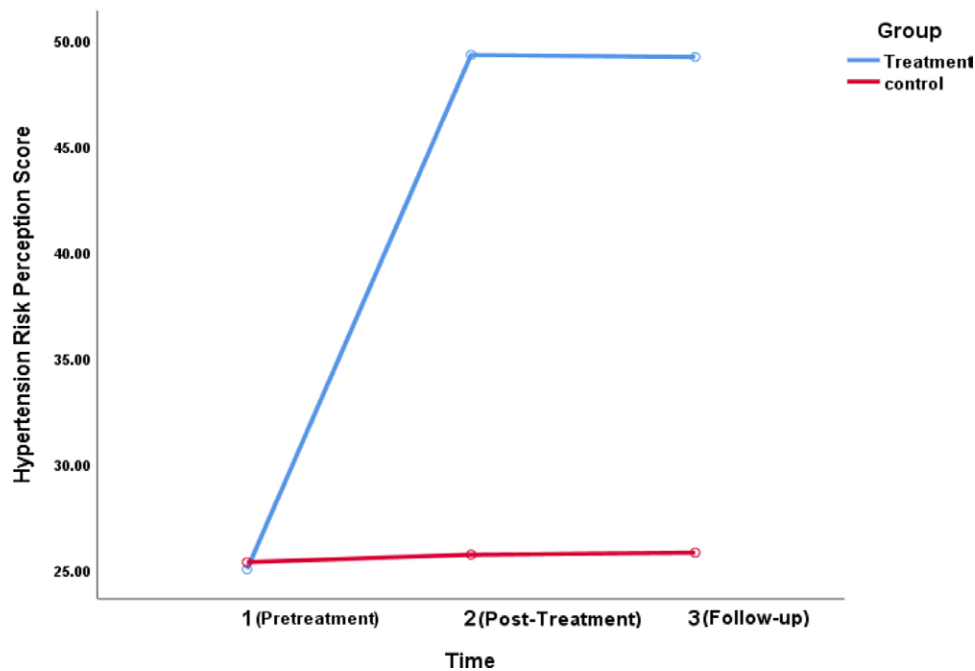


Figure 3. Graphical presentation of time × graph effect.

The findings of this study are congruent with Oyewole et al<sup>[76]</sup> who found that REBT training program significantly increased the level of participants' hypertension knowledge, lifestyle modification, and practice.<sup>[77]</sup> Again, the findings of the study strengthened the tenets of the REBT. The findings agree with the previous findings that REBT intervention could be used to improve and modify participants' harmful practices and increase their knowledge of risks associated with hypertension and capacity to acquire new behavioral habits (Jafari et al<sup>[74]</sup>) Osuala<sup>[52]</sup> showed that a group REBT program significantly increased the participants' knowledge about hypertension and perception of risks of developing hypertension. According to her a good knowledge and understanding about the risk factors of hypertension and its associated complications can motivate and encourage university lecturers to strive to adopt healthy lifestyles practices and positive attitudes toward program treatment.

Again, the findings of the study laid credence to Jafari et al who established that REBT lifestyle management programs are very effective in supporting victims/patients of Diastolic blood pressure (DBP), Systolic blood pressure (SBP), and body mass index (BMI) to surmount their health challenges.<sup>[72]</sup> The findings of this study showed that excess eating and low exercising, sedentary lifestyles, among others are learnt and could be re-learned. This study strengthened Alimoradi et al,<sup>[77]</sup> who posited that the administered REBT intervention program helps to enrich the participants' cognitive and behavioral experiences to desire to acquire new behaviors or modify old ones.<sup>[74,75]</sup>

The follow up test mean scores of participants in the HKQ-21 and PRHQ-26 measure on the perceived risk of Hypertension showed that the participants in the treatment group recorded an improvement in the level of hypertension knowledge and perception of risk of developing hypertension, motivation to sustain dietary adjustments, and lifestyle modification practices learnt during the REBT training program. It indicates that REBT-based intervention program was efficacious to help the university lecturers acquire the requisite knowledge, motivation, and skills to practice the learnt new behaviors. Therefore, the REBT training study materials given to participants in the treatment group may have helped the participants in the development of the new behaviors as observed from their follow-up mean scores. These findings are congruent with the findings of

Jafari et al<sup>[72]</sup> that the mean score of follow up treatment test significantly increased right after the program has ended and one month later and it showed the effect of educational intervention and training/instructional materials. The findings are also consistent with previous findings that providing brochures to the participants during intervention programmes would help to increase the mean scores of hypertension knowledge, attitude, and adaptive practices to overcome high blood pressure. This indicates that information about hypertension and other non-communication diseases should be packaged in educational manual/handout to communicate all the facts about the disease to the recipient. For the REBT health educational intervention program to be successful, it should impact behavioral skills such as self-control skill, goal setting skill, stimulus control skill, changing behavior skill. It also involves developing cognitive skills such as problem solving, and cognitive restructuring skills with specific recommendations on diet and exercise.<sup>[75]</sup> Our findings strengthened the findings of Fabricatore (2007) who established that participants with informed knowledge of the hypertension disease, its risk factors, effects and treatment methods are more likely to comply and adhere strictly to REBT treatment and management practices when the need arises. In applying the theory of learning, Stuart<sup>[77]</sup> stated that positive changes in eating and exercising can be achieved by modifying the environmental cues (antecedents) and the reinforcements of these behaviors (consequences)

Furthermore, we found that there was an increased level of knowledge among university lecturers that participated in the treatment group during and after the REBT educational training. This was indicated by the mean scores of the participants in the treatment group in both measures (HKQ-21 and PRHQ-26) though, low mean scores were recorded by the participants in the waitlist control group indication that gross inadequacy of information about hypertension among university lecturers in Southeast, Nigeria. That may also have accounted for the low level of awareness of non-drug REBT lifestyle modification interventions programs for hypertension treatment. This finding was supported by Alhalaiqa et al<sup>[78]</sup> who stated that information on lifestyle modification is not enough to affect the lecturers' practice behavior and knowledge and suggested that reinforcement and motivation in form of training is required. Again, our

findings about low knowledge of the prevalence of hypertension among lecturers are in agreement with previous studies who stated that the information from social media and other unofficial sources (mass media, social media and health care providers) are grossly inadequate to impact the required motivation, knowledge and behavioral, and cognitive skills to the lecturers to demonstrate lifestyle modification behaviors.<sup>[77]</sup>

Psychotherapeutic educational interventions, as evidenced in this study, has behavioral and cognitive restructuring components that are utilized to impact the required knowledge and skills and helped the university lecturers change their erroneous feelings, misconceptions and beliefs about hypertension and its risk factors. The REBT educational training intervention was shown to be significantly effective in changing irrational and dysfunctional beliefs that preoccupied university lecturers' thoughts to a rational and realistic perspective of life. Our findings showed that REBT educational intervention is significantly effective in lowering blood pressure and helps to impact lifestyle modification behaviors at follow-up period. This finding is in line with previous studies.<sup>[71,79]</sup> Similarly, mean scores of the follow up and practice measures of these scholars indicated the intervention program motivated the participants in the treatment group to engage in better lifestyle management behaviors long after the treatment has ended. This study has added to the extant literature showing that REBT is an invaluable therapy for prevention and control of hypertension in an occupational environment. Unhealthy lifestyles are capable of leading to hypertension and associated complications. Many scholars indicated that unhealthy lifestyles, irrational beliefs and misconceptions about hypertension can result metabolic syndrome, unhealthy negative emotions, a multiplicity of psychopathological conditions, and maladaptive behaviors that affect people's mental health.<sup>[78-81]</sup>

### 3.2. Implications of the study

The implications of this study are varied. The findings of this study have implications for educational administrators, lecturers, doctors, nurses, health workers, university health counselors, occupational health, and behavioral medicine, government, and the general public. First, the findings of this study have placed responsibilities to the educational administrators, health workers, and counselors as they could use the findings to mount aggressive training program to create awareness and improve the knowledge of the general public and workers about the causes, effects, and prevention of hypertension. To the educational administrators, the findings of this study have presented a training manual and replicable REBT intervention process that can be adopted in creating awareness of the effects of hypertension to other staff of the educational institutions. Through this measure, the health of lecturers and other staff, their productivity, academic outputs in the workplace, and the quality of education in the Southeast zone will improve optimally. Invariably, this will produce an improved workforce that will improve the performance students in internal and external examinations and quality of life in the zone.

Also, the findings of the study could be utilized to improve the content of the information and health messages disseminated to patients. In the same vein, health care providers should make sure that the content of their information, instructions and messages to patients should have the facts and rich information to motivate the recipient to modify their earlier views and opinion on the issues. From the findings of this study, Doctors, nurses and other health care providers should know how to package their health campaigns that can pass informed knowledge to the recipient if they should expect full compliance and adherence to their instruction. Instruction or information provided by the health workers should be rich in content to teach the patient the benefits and dangers of compliance and noncompliance to

the message/instruction. Another implication of this study is that the health care providers should consider utilizing evidence based therapeutic approach in disseminating information to workers and patients alike. The use of this approach in information dissemination could alter peoples' misconception about hypertension and create adequate awareness of the ailment, its prevention, and control measure.

Since, several studies have indicated the efficacy of the REBT educational intervention program in the prevention and control emotional, mental, psychological, behavioral, metabolic syndrome and related complications, psychologists, clinicians, non-clinicians, university health counselors, occupational therapists and behavior medicine specialists can utilize this therapeutic intervention model to help university lecturers, workers and the general public to modify their unhealthy lifestyle and metabolic syndrome challenges. Due to its attested efficacy, government, health agencies and organizations can adopt it as a method of managing and preventing hypertension, obesity, and other complication associated with hypertension. It should be incorporated into the university staff training programmes so that both the lecturers and other staff could be exposed to it. Once job-related irrational and negative thoughts and beliefs have been successfully disputed, rational and adaptive thoughts will be developed and the individual will invariably become free from hypertension complications, live a better life, be useful to himself/herself and to the society.

### 3.3. Limitations

The major limitation of this study was that only two groups of academic staff (lecturers of the Departments of Education Foundation and Business Education) of the university were used as the study participants. Thus, limiting the generalization of the findings. Though, efforts were made by including lecturers from the conventional education programme (Education Foundation) and skill-based educational (Business Education). This serves as a strength as the findings of the study can be generalized to the staff of the Faculty of Education and Vocational and Technical Education. Another limitation of the study is that the instrument for data collection used was mainly for quantitative data collection. Future studies should include qualitative data assessed through interviews, observation, and focused group discussion to elicit lecturers' opinions to support the research outcomes based on quantitative data. Also, more time for checkup, monitoring, and follow up at least four months after the treatment may be required to achieve the considerable long-term effect of REBT educational intervention therapy on the participants. Another limitation is that only participants in the treatment group benefited from the intervention. Thus, future research should provide participants in the control condition with the chance of having informal discussions before being waitlisted.

### 4. Conclusion

The aim of this study was to determine the efficacy of REBT educational therapy on hypertension knowledge and hypertension risk perception among university lecturers in Southeast Nigeria. The study showed that REBT health educational intervention therapy was effective for increasing the level of hypertension knowledge and perceived risk of hypertension among the university lecturers. Based on the findings of this study, the researchers conclude that the REBT health educational therapy significantly increased the knowledge and perceived risk of hypertension among university lecturers who received treatment compared to those in the waitlist control group. The researchers recommend the use of REBT health educational therapy to increase the level of knowledge and perceived risk of hypertension among university lecturers in Southeast Nigeria. Also, doctors, nurses and other health workers can adopt and

utilize REBT principle to disseminate evidence-based health information to patients and to the general public, utilize it for the prevention, control and propagation of information about hypertension and associated complications so as prevent the spread of the disease.

### Author contributions

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