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Research Article

Laughter Psychotherapy: An Adjunct to Clinical Management of Geriatric Depression among Rural Community Dwellers in Oyo State, South West Nigeria

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ABSTRACT

Like every other continent in the world, Africa has witnessed tremendous increase in incidence and reports of depression. Depressive symptoms in older adults clinically referred to as geriatric depression has been a global phenomenon complicating the mental health stability and general well-being in late life. Studies on the psychological management of the disorder in Nigeria have variously adopted therapies that exert the cognitive, sensory and motor abilities of the elderly thereby generating very minimal result. The study adopted a pre-test, post-test, control group quasi experimental design. A total of sixty-four (64) participants were purposively selected from two randomly selected local government areas in Ibadan. Participants were further randomly assigned into an experimental group-Laughter Therapy Group (32) and the Control Group (32). Data was subjected to Analysis of covariance (ANCOVA) and Sceffe post-hoc analysis. There was a significant main effect of treatment on geriatric depression ($F=18.583$, $p<.05$, $\eta^2=0.328$). Laughter therapy ($\bar{x}=17.60$) effectively managed geriatric depression in comparison with the control group ($\bar{x}=7.517$). There was a significant man effect of Health Locus of Control (HLoC) on geriatric depression ($F=8.045$, $p<.05$, $\eta^2=0.297$). Participants with internal HLoC had the highest post mean score (16.80) followed by those with powerful others HLoC (11.62) and chance HLoC (4.95), while personality trait had none. The study ascertained the effective adaptation of laughter therapy as an adjunct in the clinical management of geriatric depression of rural community dwelling older adults, thereby adding to existing literature on laughter therapy for future research. This contribution is advancement to geriatric depression study and management in Nigeria. Findings from the study can be adopted for use in both community and also clinical studies and management of depression.

Keywords: Laughter therapy; Health locus of control; Geriatric depression; Community dwelling older adults

INTRODUCTION

Africa, just like every other continent in the world has witnessed tremendous increase in incidence and reports of depression. Depression has been reported across all populations to be a major mental health disorder capable of jeopardizing the physiological and psychological health conditions of the sufferer [1]. Unfortunately, older adults are not exempted from the risk factors and consequences of depression as reports are indicative of their biological, psychological and environmental vulnerability [2]. Phenomenal changes across lifespan makes old age a phase of life that is characterized by multiple declines in almost all domains of functioning [3]. Apart from the general decline in function and ability at the stage of life, depressed older adults are equally faced with the burden of poor or total neglect of personal day-to-day hygiene, nervous over excitement (agitation), sad emotion, psychomotor retardation or hand tremors, dysarthria (slurred speech) and cognitive impairment [4].

Manifestation of depressive symptoms in late life especially with first onset between the ages of 65-years and over have varying presentations either as a relapse or recurrent health issue from earlier life or as a contra indication to medication use [5]. The United Nations in 2015, in their projection of the growth rate of the aged all over the world approximated a tremendous increase of about 50% in a population of about 901million to more than 1.4 billion within the spate of 2015 to 2030. On the average, this invariably indicated that older adults manifesting depressive disorder is set to increase alongside the projection; implication of which asserts that older adults are more assailable to number of contradictions on their health in comparison to the younger population.

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Geriatric depression had been explored extensively in Nigeria and has been established as a public mental health problem that has multiple devastating consequences on the individual, the family and the society [6-8]. The Nigerian Demographic Health Survey released in 2013 attributed increase in mental health incidences in the country especially among the geriatric population to disparities in geographic location and environment. They approximated that sixty four percent of the Nigerian population of which 40.2% are older adults live in the rural areas, and only thirty six percent in urban areas. This larger percentage of aged people in rural communities than in urban areas was reported to be primarily as a result of increased rate in rural-urban movements by the younger populations; thus, facilitating an alarming increase in the total of older adults' resident in rural communities. Blazer approximated the occurrence of clinically significant depressive symptoms in community dwelling older adults at 8% to 16% [9]. Unalterably, not much improvement had been recorded in the diagnosis and management of geriatric depression of community dwellers since the time of Blazer's approximation until now. This was made evident in the relative high percentage frequency of geriatric depression (26.3%) reported by Olutoki, Olagunju, Adeyemi and Aging & Mental Health in 2013 [10].

Advocacy for proper management and treatment of geriatric depression especially for rural community dwellers requires that clinicians consider their patient's treatment of choice, anecdotal records, entry data, mental and physical health status in relation to age and socio-economic status etc. [11]. Unfortunately, factors ranging from time and number of visits for each patient, uncoordinated reports of symptoms, finance etc. are issues against depression diagnosis and management breakthrough in most Nigerian rural communities. Despite challenges in health care delivery observed in many Nigerian communities, diagnosis and management of geriatric depression is reported to have been further complicated by individual beliefs, differences in depression outlook, mental awareness, and accessibility to healthcare etc., all of which constituted limiting factors for most rural communities [12]. There has been paucity of research on factors associated with the development of depression among the geriatric population part of which forms the moderating variables for this study in Nigeria. Older adults are variously exposed to other factors not peculiar to the young populace. Blazer and Hybes classified these factors into three categories: the biological/hereditary factors; the psychological factors and the social/environmental factors [9].

Personality trait is one of the psychological risk factors of geriatric depression capable of interfering with the individual's intrinsic attribute determining their extrinsic dispositions towards health and eventual culpability to the disorder. For instance, the ability of an older adult to adjust to a stressful life event like widowhood or bereavement and their attitude towards stress is determined by their personality trait [9]. Mental health challenge like depression causing reduced abilities to perform daily tasks whose rate of recovery is strongly hinged on personal outlook to health and medical regimen can be proportionately managed depending on the personality trait inherent in the individual and his attitude towards help. Risk factors of depression observed either by the individual or a close relative according to Costa can be indicated by the degree of apprehension, resentment, timidity, impertinence and culpability exhibited by the individual [13]. Older adult's personality trait is a significant factor on their health locus of control (i.e., their ability to take health decisions). Richard, Jenkins and Thomas confirmed that older adult's health decisions on mental issues like depression is hinged on their personal conviction that the outcome of their health decision is determined by three factors: their innate will to get well (Internal HLOC), their doctors/psychiatrists diagnosis and prescriptions (Powerful Others HLOC) and on fate/luck (Chance HLOC) [14].

It is assumed in most Nigerian communities that, close relations like family members take up the social responsibility of taking health decisions on behalf of their aged [15]. Their contentment of the decisions taken by these close relatives invariably supersedes their thoughts. Older adult's trust and reliance on spiritual or supernatural phenomenon strongly dictate their control beliefs. Community dwelling older adults are distinctly different in their exhibition of a great tenacity to accept that their health outcomes are supernaturally related to chance, fate, luck or special deserving favors from ancestors or the spiritual realm [15]. Health locus of control for most community dwelling older adults in Nigeria is expressed in their psychopathological views and outlook to mental health and mental health services delivered through alternative means such as religious organizations, immersion in exorcism, attending deliverance sessions, prayer and fasting, time travelling in trance and visions, traditional healers use of incisions, herbal mixtures etc. The general assumption was that traditional believers could easily diagnose physical complaints of severe depression and profess influencing beliefs in supernatural alliances as the cause of the disorder.

There is a constant basis for disagreement between mental health providers, medical personnel and psychotherapists alike on the construction of experience of depression by traditional African older adults. This is particularly relevant among some communities surrounded with diverse cultural and traditional assertions affirming the former belief in herbal therapies and concussion, as an effective choice of management for mental health conditions that seems to defy medical understanding [16]. The good news however is that, geriatric depression can be effectively managed in and out of a clinical environment with psychotherapies, pharmaco therapies, Electroconvulsive Therapy (ECT) [17]. In view of these incidences and potential consequence of untreated geriatric depression on the sufferer and their families alongside numerous limitations and side effects of antidepressants there is a strong need to review the effectiveness of non-pharmacological treatment models complementing the clinical management of geriatric depression?

A general specification employed by geriatric psychiatrists globally proposed the use of the combination of drugs (antidepressants) with psychological interventions (CBT, reminiscence therapy, interpersonal therapy etc.) for effective outcome of a reduced depression [18]. In Nigeria, over twenty antidepressants (depression induced medications) have been authorized and certified safe by the National Agency for Food, Drug Administration and Control (NAFDAC) for depression in the elderly as per the Nigerian Standard Treatment Guidelines of 2008. Antidepressants had been the official prescription for depression in most health facilities in the country. Considered one of the major treatments for geriatric depression, globally, only a minority of depressed older adults about 30-40% are taking these medications [18]. Its wider acceptability is not void of complaints of side effects like excessive weight gain, dizzy spells, bowel irritation, anxiety etc. Although complaints

of complications from the use of antidepressants in old age have been received in various quarters, complications of medications for geriatric depression treatment can also be complicated by different factors which include the multifarious use of medications associated with aging, increased potential interactions of multiple prescriptions and age.

Antidepressants for geriatric care

Psychotherapy which forms one of the management modalities of geriatric depression is the process of engaging in an in-depth discussion (sessions) with a patient referred to as client to obtain facts and information regarding their current emotional state. Studies on the psychological management of depression in both young and older populations have established the effectiveness of psychotherapies as a treatment regimen [7,19]. Its efficacy in resolving psychological disorders have established its empirical relevance across cultures. Cognitive Behavioral Therapy (CBT), interpersonal psychotherapy, cognitive reminiscence therapy, problem-solving therapy are few empirically supported psychotherapies effective for managing geriatric depression (Table 1).

Other evidence-based therapies established to be adequately effective but not extensively explored as management options for geriatric depression in Nigeria, considering cognitive challenges, cardiac implications, limitations in function and physical illness in old age, include supportive therapy, laughter therapy, psychodrama, music therapy, dance and movement therapy, humor therapy etc. Psychotherapeutic sessions are usually between six to twelve sessions delivered within a period of six to eight weeks. Comparisons in the effectiveness of psychotherapies and pharmacotherapy cannot be effectively established in literature as about 45%-70% patients who underwent a therapeutic session recorded success rate that is quite similar to statistics observed across patients treated with antidepressants [20]. The introduction of psychotherapies as a treatment model for psychological health challenges had elicited a wide range of attitudinal differences across geriatric clinics in Nigeria. Community dwelling older adults manifesting depressive symptoms are still very much in dire need of constant enlightenment and awareness of the disorder.

Laughter therapy

There has been an increase in awareness and advocacy for non-invasive therapies and pharmacological interventions. Interests in the psychological benefits of laughter developed in the 1960s and have maintained a progressive stance in modifications and global acceptance [21]. This progress however was met with stiff opposition questioning the rising dominance of humor preceding emotional laughs. The psychological effects of laughter, health and general well-being was proposed by Dr. William Fry, a California psychiatrist considered one of the pioneers of 'gelotology' i.e., the scientific study of laughter. Dr. Fry affirmed that the physiology of the human system can be positively stimulated by a blithesome laughter. He maintained that twenty seconds of deep laughter have a therapeutic effect of increasing heart rate for an approximated time of five minutes [22].

Laughter therapy in its uniqueness need no effort at organizing or planning as it requires less preparation in terms of venue, materials and assistance. Its cost implication is relatively low; it needs perfect timing, and can be easily accessible [23,24]. A number of studies have confirmed the psychotherapeutic effects of laughter part of which was the reduction of stress hormones by increasing neurochemical reactions in the brain, immune boosters and white blood corpuscle. Laughter is an activity that releases natural NK cells triggering a multiple release of lymphocytes in humans [25-27].

Management of geriatric depression with psychotherapy is an interaction that demands not just the use of an empirically relevant therapy but needed a more connection that is far beyond fact finding [28]. Old age is a unique phase of life that is burdened with a lot of complications and adults at this stage battle with comprehension and paying attention to details. There is a very minimal rate at which they can be manipulated in terms of teaching-learning situation. To achieve optimal results with psychotherapies, close attention needs to be given to details and not just results. Psychotherapists are just getting to the understanding of the need to focus on directing scientifically supported therapies towards achieving a positive impact in the emotional regulation and stability of mental health in the geriatric population. The goal of therapy which is an alliance therapeutically should be a central focus and in order to successfully achieve this, the clients need to be emotionally ready part of which forms the objectives of laughter therapy [29].

Laughter plays a unique role in maintaining and achieving a stronger therapeutic connection between the client and the psychotherapist. As expected, there is always a negative attitudinal response, hesitation, indifference and coldness towards psychotherapies by depressed older adults [24]. The therapists need to create an atmosphere that is comforting and convincing enough for safety and confidentiality of information and activities discussed during the sessions. Depression is a disorder that deceived older adults into thinking over the past failures arousing a need to feel unaccomplished and unworthy resulting in self restricting attitudes towards getting help. Peter Martin, in his description of older adult's report of depression, he stated that 'life is stuck, and his response, 'laughter 'un-sticks' this stance and bring measures of relief' [30]. He further suggested that in managing negative premonitions towards therapy in older adults, there is need to ensure a level playground in communication and ideas which he suggested can be achieved through laughter. Owing to the multitudinous psychosomatic challenges faced by older adults as age advances, physical frailty, impairment in vision, hearing and cognition are obvious limitations to the comprehensibility of interventions that requires deep intuition. Tse et al. argued that laughter therapy used in managing geriatric depression combined with medications is proven an effective means of improving older adult's quality of life and further enhance their daily functioning [31]. Positive psychotherapeutic results were also recorded while observing the combination of therapy and antidepressant use in a number of older adults for a period of eight weeks of therapy.

Psycho-physiological effects of laughter

Extensive research all over the world for the past two decades has shown the effectiveness of laughter as potential in fostering a positive effect on various systems of the body [32]. The process of aging is not void of several diseases more than 70% of which are stress related. The research on laughter as a therapeutic measure in geriatric health shows its effects on unwinding the negative effects of stress, which is the catalyst of almost all age-related health problems [33]. Laughter is having a profound impact on mind and body. It strengthens the immune system and thus prevents sickness

and aids in the healing process by reducing stress. Thus, it is a best remedy for mind -body wellness. 'Anatomy of an Illness" a book published in 1979 by an American writer Norman Cousins explained the psychological effect of laughter following recovery from functional disabilities in old age. His story inspired many researchers and resulted in the discovery of the psychological effect of laughter in the natural secretion of NK hormones. Part of his discoveries demonstrated the physiological effect of laughter on the human system. His study further established the importance of a spontaneous laughter as a form of exercise strong enough to reduce respiratory infections and strengthen the immune system.

Lee Berk and his colleagues presented the therapeutic function of laughter in their experimentation on hormone secretion and immunity. Their study established that laughter can lower stress level and improve immunity by the continuous secretion of immunoglobulin IgA white blood cell an important immune hormone secreted to fight the development of tumors [33]. In spite of the positive benefits of laughter, older generations seemed to have forgotten to laugh. Laughter is fast disappearing from a highly competitive and tensed world. If laughter is considered an expression of happiness, it then invariably means that older adults are not happy with their lives and they have no reason to laugh [33]. On the other hand, there are several reasons the aging process has left many older adults sad, depressed and frustrated. Thus, the question of, 'how can older adults still find laughter and who or what will make them laugh?' become very significant. The physiological effect of laughter is further explained in Garcia-Rodera's classifications as [34]:

a) Muscle relaxant,

b) Improving inhalation,

c) Stimulating blood circulation,

d) Decreasing stress hormones,

e) Increasing antibody protection,

f) Increasing pain margin and forbearance and

g) Enhancing mental capacity

The psycho-physiological effects of laughter in old age primarily describe its usage as an adjustment mechanism and a tool to improving interpersonal relations. Old age is considered a period where individuals finds it difficult maintaining old relationships and creating new ones. Adults at this stage are observed to carefully select their social circle of friends and relatives which makes it extremely difficult for them to engage in activities capable of stirring a good laughter. In summary, studies reviewed on the psychological effects of laughter as a therapeutic tool are expressed in their abilities to:

A. Reduce stress, agitation, apprehension, and subside the physical symptoms of depression;

B. Minimizes mood swings, hopelessness, physical exertion;

C. Improves memory recall and ingenuity;

D. Encourages social relations, allurement, and familiarity;

E. Supports the maintenance of social identity and sense of communality;

F. Promotes emotional well-being [35].

Techniques of laughter therapy

While laughter therapy sessions require necessary expertise to be organized, laughter is an activity that requires less preparation and skills. Clinicians, psychotherapists and health care professionals do no need to be comic directors or comedians before careful integration of laughter into clinical practice is done. Nevertheless, health care experts need to strictly adhere to the rule of thumb when adopting the use of laughter therapy in clinical settings and other health care institutions. Individual or group therapy session with the geriatric population are distinct in presentation, therapists must ensure that participant's differences and fears regarding therapies are allayed. Most importantly, therapist must introduce some warm up exercises relating to laughter experience [36].

Breathing techniques and phono-respiratory coordination: Breathing is one of the most significant elements in educating and preparing laughter sessions with any population sample. Its importance relies heavily on the findings that breathing helps in the sustenance of laughter while bringing the activity to a halt. The diaphragm and striated muscle of the abdomen upon which laughter is sustained are maintained by the breath while the exercise of laughter is going on [37]. Inspiration should be adenoidal while expanding the nostrils, and enough to inhale the excess air necessary for perceptible laughter. To suit vocalization, Rodriquez asserted that laughter termination time should have achieved adequate breath level; and taking into consideration the accompanying health complications of geriatric depression especially cardio vascular diseases, older adults may find it difficult taking deep breaths [37]. In other words, they needed to be thought breathing rate from simple to complex, taking into consideration their limitations. They may not fully attain the phono-respiratory coordination; the idea is to introduce them to the technique. Takeda suggested other numerous exercises that can enhance nasal breathing for the geriatric population which includes the basic understanding of the act of deep breathing and phono respiratory coordination, which in themselves are also generating laughter [38]. Playful stimulated laughter that is premised on the fundamentals of the inability of the body to differentiate genuine laughter resulting from a funny concept and laughter emanating from the component of exercise is established to be the most suitable form of laughter exercise for the geriatric population.

Facial and body gymnastics: The act of laughter is usually succeeded by burgeoning facial expressions and bodily rhythmic movements which should not be withheld when laughing. By culturing several muscles through different aerobic exercises, laughter can be developed, mimicked or assumed with the same stimulants used in initiating the laughter. Arminen and Halonen listed numerous activities structured to elicit humorous facial expressions and gestures [39]. Participants in laughter therapy are taught to practice shakes, stretches, twists, jumps, bends, tumbles and other bodily shakes, according to participant's ability. Laughter therapy used in group counseling requires that therapist maintain eye contact with every member of the group, this act is considered very important in strengthening laughter 'fever' and its therapeutic effect.

Laughter warm-up techniques: Through voice exercises, trachea relaxation and warm-up skills', breathing is boosted and vocal training instruments are prepared in preparedness for a laughter activity. Fitting, articulation and rhythmic strategies as with the voice needed to be taught ahead of the sessions. There are three

major tones for laughter presentation: low, medium and high toned. The fitting strategy helps in emitting laughter with intensity thereby achieving the maximum results.

Therapeutic laughter techniques for the closing stage

Most often laughter sessions are rounded up when laughter is still very obvious and in continuum but gradually halted to help restore it to ground level. Although there is no widely accepted norm to the structure and application of laughter therapy and since this stage is normally therapist-dependent, Mora-Ripoll and Rodriguez documented the following laughter techniques that can be used to bring a laughter session to a convenient close [24,37]:

1. Floor laughter exercises
2. Grounding Techniques
3. Group prayers
4. Positive Affirmations
5. Feedback, appreciation and evaluation

Although the effectiveness of laughter therapy has been challenged in many quarters with evidences suggesting the enormous psycho physiological effects of laughter on certain health issues; critics have continuously argued the use of a combination of methods alongside laughter in generating positive results i.e., the use of videos, comedies story telling etc. There is however paucity of research on the suitability of laughter therapy among older adults; studies available relate laughter with Complementary/Alternative Medicine (CAM) which is rarely used in clinical settings. This study is interested in examining the psychological effectiveness of laughter therapy as a complementary management model for geriatric depression. Firstly, the development, concept and techniques of laughter therapy will be discussed to be followed by its applicability for the geriatric population. The study will also report the strengths and potential weaknesses of the therapy for the population under study. Recommendations will be also made for future research.

RESEARCH HYPOTHESIS

The following hypothesis was generated and tested at 0.05 level of significance:

H_O1-There will be no significant main effect of treatment on geriatric depression.

H_O2-There will be no significant main effect of health locus of control on geriatric depression.

H_O3-There will be no significant main effect of personality trait on geriatric depression

RESEARCH METHODOLOGY

Participants

The locale of the study was Oyo State, Southwest Nigeria. Two rural communities in two Local Government Areas (LGAs) within Oyo State were purposively selected for the study. Sixty-four participants screened with the Geriatric Depression Scale (GDS- Short Version) were randomly assigned into Laughter Therapy Group (32) and the Control Group (32). Treatment lasted eight weeks. Simple random sampling technique was used in selecting rural communities within these two local governments selected. Selection of these communities was based on the classifications of the National Bureau of Statistics in Nigeria documented in Raji, Mohammed, Mohmoh, Suleiman and Raji who defined rural communities as neighborhoods with population of 20,000 people or less [40].

Study design

The study adopted a pretest-posttest, control group quasi-experimental design. An experimental group (Laughter Therapy group) was exposed to Laughter therapy techniques. The control group was exposed to teachings on 'Safety Measures in Old Age'.

Instrumentation

Four instruments translated into the local language were used to collect data for this study: Hamilton Rating Scale for Depression (HAM-D); The Big Five Personality Inventory; Multidimensional Health Locus of Control Scale and the Geriatric Depression Scale (Screening Instrument). The instruments were translated into Yoruba language at the Department of Linguistics and African Languages, University of Ibadan bearing in mind the literacy level of participants in other to ensure adequate understanding and comprehensibility of constructs each instrument is set to measure. No local language version of the instruments was known to have been in existence prior to the time of this study. The validity of the instruments was determined through a pilot study conducted two weeks peceeding the commencement of the study.

Hamilton Rating Scale for Depression (HAM-D)

This is an assessment scale designed specifically for older adults to assess indication of depression. Max Hamilton originally published the scale in 1960 and revised it in 1966 and 1967 [41]. The instrument is used to access the severity of geriatric depression by investigating emotions, contrition, suicide ideation, restlessness, anger or retardation, anxiety, weight loss, and somatic symptoms. The original 1960 version contains 17 items to be rated (HRSD-17), but four other questions are not added to the total score and are used to provide additional clinical information. Each item on the questionnaire is scored on a 3-5 point, depending on the item, and the total score is compared to the corresponding descriptor. Assessment time is estimated at 20 minutes. A score of 0-7 is considered normal. Scores of 20 or higher indicate moderate, severe, or very severe depression, and are usually required for entry into a clinical trial.

Geriatric Depression Scale-short form (GDS-15)

The GDS is a yes or no questionnaire that focuses on assessing depression in older adults. The original version has 30 questions and has been determined valid and reliable [42,43]. There have been validation and reliability studies conducted on acutely ill older adults using the GDS15, GDSIO and GDS4 which are fifteen, ten and four-item scales respectively [44]. Of these shortened versions, the GDS15 has been cited both as valid and as reliable with respect to older adults in general practice with a high correlation of r=0.89 to the GDS- Long Form. The GDS 15 will be used in this study because of the population and the number of instruments that they will have to complete. The overall purpose of this measure is to determine if the participants meet the criteria for major depressive disorder.

The big five inventory BFI questionnaire

This is a standardized psychological assessment instrument developed by John [45]. The instrument contains 44 items designed to measure personality from a five-dimension perspective (Extraversion, Agreeableness, Conscientiousness, Introversion and Openness to Experience). Direct scoring is used for all the items. It is scored on a 5-point scale ranging from 1-5, 1-Disagree Strongly, 2-Disagree a little, 3-Neither agree nor disagree, 4-Agree a little and 5-Agree Strongly. Values of the numbers shaded are added to obtain the respondent's scores in each of the subscales. The coefficients of reliability provided by John is Cronbach alpha. 80- and two-weeks test-retest of 0.76 [45]. Big Five Inventory has mean convergent validity coefficient of .75 and .85 with the Big Five Instrument authored by Costa and McCrea and Golberg respectively [46,47].

Multidimensional health locus of control scale

Health Locus of Control Scale (HLCS) was developed by Crown and Marlowe and was revised by Wallston, Wallston, Kaplan and Maides [48,49]. It assesses the extent of control a person thinks he/she has over own state of health. The health locus of control scale contains eleven (11) items that are scored on a 6-point like at ranging from 1(strongly disagree) to 6 (strongly agree). Five (5) items (1, 2, 8, 10, 11) are worded in internal direction to determine internal health locus of control and are directly score while Six (6) Items (3, 4, 5, 6, 7, 9) are worded in the chance health locus of control and (5) items (12, 13, 14, 15, 16) are worded in the powerful others health locus of control with both chance and powerful others control scored directly, determining the external health locus of control. Sample items are "If I take care of myself, I can avoid illness.", "Good health is largely a matter of good fortune." The Health Locus of Control scale has shown to have a good reliability and validity properties. Wallston and colleague reported test-retest reliability co-efficient of .71 in a study involving a sample of women who were involved in weight reduction programmed [49]. Salami as cited in Akomolafe and Popoola reported test–retest reliability coefficient of 0.75 using Nigerian Students, a two week the pilot test with the geriatric population however recorded a reliability coefficient of 0.76 [50,51].

Procedure

The study was carried out in four phases: pre-sessional activities, pre-test, treatment and post-test. At the pre-sessional phase, participants were contacted through their community heads and religious organizations. They were thereafter visited in their homes to obtain their consent to participate in the study this was done in order to obtain the consent of relatives and those taking care of them respectively. Time and venue were further allotted to participants for the screening. Participants were screened at the pretest phase using the Geriatric Depression Scale at this stage and allocated into the laughter therapy group and the control group respectively using the balloting process. At the treatment phase, participants were exposed to eight weeks (eight sessions) of treatment. Each session lasted forty-five minutes; though the participants in the control group were not treated, they were given a health talk titled:"Safety Measures in Old Age". The goals of the treatment at the laughter therapy group were achieved by the introduction of familiar theatre comedians to demonstrate the techniques involved through well scripted comedy skits and hilarious gestures. Participants were requested to invite two family members into the sessions to make the atmosphere relatable. The comic actors invited were given tokens in appreciation of their support and services. At the final phase (post-test phase), the Hamilton Rating Scale for Depression was administered to the participants in the experimental group and the control group to obtain the treatment outcome results (posttest scores).

Ethical considerations

Administrative permission to conduct the study was given by the University of Ibadan, Southwest Nigeria. Letter of introduction obtained from Department of Guidance and Counseling was taken to the Ministry of Health at the state local government secretariat. The approval to conduct the study was taken to the Primary Health Care department of each local government selected for further approval.

RESULTS

Data collected were analyzed using the Analysis of covariance and the Scheffe Post-hoc analysis at 0.05 level of significance. ANCOVA was used to determine the main effects and interactive effects of the independent and moderating variables on the dependent variable (geriatric depression). The Scheffe Post-hoc Analysis was used to determine the direction of differences for significant results (Table 2).

Demographic profiles of respondents

Summary of ANCOVA showing the main and interaction effect of Treatment, Personality Traits and Health Locus of Control on Geriatric Depression (Table 3). The table shows the main and interactive effect of Treatment, Personality Traits and Health Locus of Control on Geriatric Depression. It is also observed that there was a variance of 81.4 percent accounted for by the independent variables.

Hypothesis one: There will be no significant main effect of Treatment on Geriatric depression of rural community dwellers. Table 1 show that there was a significant main effect of Treatment on Geriatric depression. ($F=18.583$, $p<.05$, $\eta^2=0.328$). This implies that there is a significant main effect of treatment on geriatric depression of rural community dwellers. The hypothesis is rejected (Table 4).

Hypothesis two: There will be no significant main effect of Health Locus of Control on Geriatric Depression. The table showed the estimated marginal means of Health Locus of Control on Geriatric Depression. The result indicated a significant main effect of Health Locus of Control on Geriatric Depression. ($F=8.045$, $p<.05$,

Table 1: Dosage of antidepressants for geriatric [52].

Antidepressant	Initial Dosage	Generic Availability
Fluoxetine	10 mg; 20-30 mg	Yes
Paroxetin	10 mg; 20-30 mg	Yes
Sertraline	25 mg; 50-100 mg	Yes
Citalopram	10 mg; 20-30 mg	Yes
Venlafaxine (Extended release)	37.5 mg; 75-150 mg	No
Bupropion (Slow release)	150 mg; 150-300 mg	Yes
Mirtazapine	7.5 mg; 15-45 mg	Yes

Table 2: Summary of ANCOVA showing the main and interaction effect of treatment, personality traits and health locus of control on geriatric depression.

Profile of the respondents	Frequency	Percentage
Age		
65-70 years	31	46.3
71-75 years	13	19.4
76-80 years	13	19.4
81-85 years	9	13.4
86-90 years	1	1.5
Gender		
Male	31	48.4
Female	33	51.6
Religion		
Christian	40	59.7
Muslim	24	35.8
Others	3	4.5
Ethnicity		
Yoruba	57	85.1
Igbo	3	4.5
Others	7	10.4
Marital status		
Married	55	82.1
Divorced	12	17.9
Family type		
Monogamous	25	37.3
Polygamous	42	62.7
Occupation (Past)		
Farmer	7	10.4
Trader	22	32.8
Civil servant	34	50.7
Engineer	2	3.0
Musician	1	1.5
Artisan	1	1.5
Occupation (Present)		
Retired/Pensioner	39	58.2
Farming	2	3.0
Trading	9	13.0
Civil servant	16	23.9
Clergy	1	1.5
Living arrangement		
With immediate family	43	64.2
With relatives	19	28.4
Alone with maids	5	7.5
Significant negative event		
Bereavement	32	47.8
Sickness	12	17.9
Finance	6	9.0
Separation	3	4.5
Non/Others	14	20.9

η^2=0.297). The hypothesis is thus rejected (Table 5).

The Table 6 shows that there were pair-wise significant differences between Chance HLoC and Powerful Others LoC and between Chance HLoC and Internal HLoC.

Table 3: ANCOVA showing the main and interaction effect of treatment, personality traits and health locus of control on geriatric depression of rural community dwellers.

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta. Sq
Corrected Model	4887.467	25	195.499	6.642	.000	.814
Pretest Depression	70.873	1	70.873	2.408	.129	.060
Main effect						
Treatment	546.998	1	546.998	18.583	.000	.328
Health Locus of Control	473.601	2	236.801	8.045	.001	.297
Personality Traits	190.587	4	47.647	1.619	.189	.146
2-way Interactions						
Treatment x HLOC	52.656	2	26.328	0.894	.417	.045
Treatment x Personality Traits	166.491	4	41.623	1.414	.248	.130
HLOC x Personality Traits	341.983	7	48.855	1.660	.149	.234
3-way Interactions						
Treatment x HLOC x Personality	120.157	4	30.039	1.021	.409	.097
Error	1118.517	38	29.435			
Corrected Total	6005.984	63				

Note: R Squared=0.814 (Adjusted R Squared=0.691)

Table 4: Estimated marginal means of treatment on geriatric depression.

Treatment Groups	$\bar{X}$	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Laughter Therapy	17.600	1.166	15.240	19.960
Control	7.517	1.231	5.026	10.008

Table 5: Estimated marginal mea ns of health locus of control on geriatric depression of rural community dwellers.

Health Locus of Control	$\bar{X}$	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Chance	4.945	2.576	0.271	10.160
Powerful Others	11.622	1.325	8.940	14.303
Internal	16.798	1.059	14.653	18.943

Table 6: Scheffe post hoc test showing multiple pair-wise analyses health locus of control on geriatric depression.

(I) HLOC	(J) HLOC	Mean Difference (I-J)	Std. Error	Sig. p-value
Chance	Powerful Others	-10.17*	4.01	.044
	Internal	-13.11*	3.90	.004
Powerful Others	Chance	10.18*	4.01	.044
	Internal	-3.03	2.08	.348
Internal	Chance	13.21*	3.90	.004
	Powerful Others	3.03	2.08	.348

Note: *Sig. at .05 level

Hypothesis three: There will be no significant main effect of Personality Traits on Geriatric Depression.

The Table 7 showed the estimated marginal means of Personality Trait on Geriatric Depression. The result indicated that there was no significant main effect of Personality trait on Geriatric Depression ($F=1.619$, $p>.05$, $\eta^2=0.146$). The hypothesis is accepted.

DISCUSSION

The study examined the adaptation of laughter therapy as an adjunct to clinical management of geriatric depression of community dwelling older adults. Three hypotheses were formulated to be tested at 0.5 level of significance two of which were significant while one was not. Hypothesis one stated that there will be no significant main effect of treatment on geriatric depression of rural community dwellers. This hypothesis was rejected as the result in Table 1 confirmed that the main effect of treatment on geriatric depression of rural community dwellers was significant. This connotes that laughter therapy was effective in managing geriatric depression fostering a significant reduction effect. This finding corroborates the submissions of Siregar and Gluttom in their study of laughter therapy as an intervention in reducing late life depression in the elderly in nursing homes [28]. Their study established the effectiveness of laughter therapy as a simple intervention that requires no formal structure and can be carried out anywhere. Alongside this submission, they suggested the need to incorporate laughter therapy into the theoretical practices and learning of student nurses to further expand their skills in depression management.

Similarly, the studies of Shitole, Shitole & Pai and Ghodsbin, Ahmadi, Jahanbin & Sharif confirmed the easy adaptation of laughter into daily stress as it is considered cost effective, less invasive and natural to use. Its intimate and inborn quality makes it adaptable for all ages even with conditions like insomnia and anxiety [53]. Ko & Youn also expressed similarities in their findings of the effects of laughter therapy on depression, cognition and sleep among community dwelling elderly with studies demonstrating the use of humor to elicit laughter. Though their use of laughter therapy had a significant effect on depression and sleep, they expressed a doubt on the effectiveness of laughter therapy and quality of sleep in older adults Similarly, Francisco and colleagues in expressing a different opinion on limitations inherent in quasi experimental research suggested that integrating laughter therapy module into treating mental health disorders may require a more standard treatment regimen for greater improvement compared to the usual treatment involving laughter techniques alone [54].

Hypothesis two was rejected because the result shown in Table 3 indicated that the significant main effect of health locus of control on geriatric depression of rural community dwellers was significant. This finding is in line with Zimmerman whose result posited that the level of rurality in and of itself was not significantly associated with depression severity, prevalence rate, or incidence of depression other than healthcare utilization. Zimmerman, in her study concluded that although rural or urban status did not directly affect the health locus of control and depressive symptoms, she suggested follow-up analysis that indicated the possibility due to the heterogeneity of individuals within rural and urban cities [55]. The finding is in corroboration with Aflakseir and Abadi's study where relationship was established between the components of health locus of control with depression in older adults aged 65 and over [56]. Although their result established the correlation of chance and powerful others health locus of control with depression; it reported lower levels of health locus of control amongst individuals aged 65-74 representing 60% of the total population used in the study. This study further established that the low internally perceived health locus of control of older adults can strongly precipitate depression as health decisions for the geriatric population are either determined by their children, careers or their social support circle. Older adults with low internally perceived health locus of control felt that they are unable to adequately provide the financial means of obtaining healthcare either from the medical facilities available or seek the conventional means. Older adults who perceived more control on their physical and mental condition were less susceptible to depression.

Moreover, findings from this present study suggested that attributing difficult conditions such as physical illness to God and destiny helped rural community dwelling older adults in Oyo state attain a better health. The stronger the older adult's health locus of control, the stronger the health goals they anticipate for their wellness and the stronger their adherence to engage in health befitting behaviors even in the face of hardship and lack [55]. A vast body of evidence reveals that older adult's health beliefs and their ability to take healthy decisions on their wellness and health-related behavior play a unique important role in their overall health status and general functioning. The firmer the inculcated believe control on their health, the higher their possibility of enlisting and sustaining efforts needed to adopt and maintain a positive health-seeking behavior such as reporting in a nearby health centers when need be and checking with their doctors regularly for medical checkups. Problems emanating from wrongful expression of depression cited in most of the studies reviewed found that poor health seeking attitude causes depression and have direct consequences on the general wellness of the sufferer. Broomberger and Mathews found indications that the inability of older adults to make positive health decision is a predisposing factor to the onset of depression and it thus have a resultant negative effect on the sufferer's mental health [57].

The third hypothesis established that personality trait on late life depression was not significant. The personality traits explored in this study are the personality traits of the big five i.e., extraversion, agreeableness, openness, neuroticism and conscientiousness. This

Table 7: Estimated marginal means of personality trait on geriatric depression.

Personality Type	$\bar{X}$	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Extraversion	9.530	1.800	5.887	13.173
Agreeableness	14.426	1.643	11.101	17.751
Openness	15.365	1.746	11.381	18.899
Neuroticism	11.018	1.852	7.269	14.767
Conscientiousness	11.923	2.121	7.630	16.216

implies that personality trait is not an important predictor for the onset of depression even in old age, and it is not in any way influenced by other predictors or aging factors.

Other studies: Fanous and Gardner found a strong direct role of extraversion, introversion and conscientiousness strongly predicting depression in younger populations [58]. Just as Heady and Wearing also reported that after analyzing the Big-Five traits, extraversion and introversion was the most potent predictor of geriatric depression [59]. This study recorded the highest mean value for openness, agreeableness and neuroticism as closely linked to the complications of depression in old age which is highly related to the findings of Morse and Lynch who reported that about 34% of the variance in subjective well-being of older adults was accounted for by agreeableness while about 1% was accounted for by extraversion. This result was at variance with other studies such as Bright who found that openness to experience significantly and positively predicted geriatric depression. The emergence of neuroticism as the strongest personality trait found to be more susceptible to geriatric depression was not per chance; neurotic personalities have characteristics that exhibit the act of getting themselves into situation that promote negativism and experience negativities, and give unique importance to negative reactions [60]. Older adults who have exhibit traits of neuroticism show vulnerabilities in facing frustrations when pressured, hence culminating into depression, especially when resident in rural communities' void of social amenities.

CONCLUSION AND LIMITATIONS

There are few limitations in the course of the study that are worthy of note. The sample size adopted in the study may not portray a true representation of older adults in communities in Oyo State. There is therefore a need for caution in the use of the findings of the study in a larger population. The inability of the researcher to control participants recruited for the study is another important limitation. Older adults lacking social support in terms of mobility and financial assistance could not make it to the study venue thereby increasing attrition rate recorded during the study. Regardless of these limitations, the findings of this study however, produced the following conclusions: Laughter therapy was effective in managing geriatric depression among community dwelling older adults. Health control of control moderated the effect of treatment of geriatric depression of rural community dwellers, while personality trait did not.

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