Research Article

Effectiveness of Laughter Therapy and Music Intervention in the Psychological Management of Geriatric Depression among Rural Community Dwelling Older Adults in Oyo State, Southwest Nigeria

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ABSTRACT

Background: Global concerns for geriatric depression (GD) and its associating consequences are on the increase. Despite advances at GD management in Nigeria, a lot of older adults are disadvantaged in terms of awareness, environment etc. Previous studies focused on prevalence and predisposing factors of GD, while those that explored depression management investigated the effectiveness of antidepressants and psychotherapies that exerts the cognitive, sensory and motor abilities of the elderly.

Method: The pre-test, post-test, control group quasi experimental design with a 3 × 5 × 3 factorial matrix was adopted for the study. A total of ninety-four (94) participants were purposively selected from three randomly selected local government areas in Ibadan. Participants were further randomly assigned into two experimental groups - Laughter Therapy Group (29), the Music Intervention Group (34) and the Control Group (31).

Results: Data were subjected to Analysis of covariance, and Scheffe Post-hoc analysis. There was a significant main effect of treatment on geriatric depression ($F_{2, 82}$ = 7.323, P<.05, partial η^2 = 0.152). Laughter Therapy ($\tilde{x}$=13.03) and Music Intervention ($\tilde{x}$=11.91) effectively managed geriatric depression in comparison to those in the control group ($\tilde{x}$=6.88). There was a significant main effect of personality traits on GD ($F_{(1,97)}$ = 4.679, p<.05, partial η^2 =.054). There was a significant main effect of health locus of control on geriatric depression ($F_{2, 96}$ =4.210, p<0.05, partial η^2 =0.093).

Conclusion: The study has ascertained the effectiveness of laughter therapy and music intervention in the psychological management of geriatric depression of rural community dwelling older adults, thereby adding to existing literature on LT and MI for future research. This contribution is advancement to geriatric depression study and management in Nigeria; hence, findings from the study can be adopted in both community and clinical studies of depression.

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

INTRODUCTION

Global concerns for depression manifested in older adults and its associating consequences are on the increase. Over 300 million people of all ages have at one time suffered from depression [1]. The world's population is rapidly ageing and within the spate of 2015 to 2030, the number of older adults aged 65 years and above across the world is projected to grow amazingly by 50% from about 901 million to more than 1.4 billion [2]. Averagely, the number of older adults manifesting symptoms of mental disorders such as depression is set to increase proportionately among the estimated population. This increase however could constitute social and environmental risk to the sufferer, their families, and the society at large.

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Geriatric depression is a mental and psychological disorder manifested in older adults aged 65 years and above. It is a major public health issue projected to be the second leading cause of burden of disease [3]. Evidences made available in literature however suggest that depression with visible symptoms of dysphoria, hopelessness, psychomotor retardation, despair and discouragement is a common mental health challenge in late life [4-6]. Depressed older adults exhibit considerable loss of self-esteem, they constantly ruminate over past mistakes or failures recorded in their earliest years. More significantly, changes are observed in their eating and dietary pattern resulting in poor appetite control, binge eating, food aversion leading to drastic weight loss or weight gain. Apart from these physical changes, depressed older adults are faced with the burden of poor or total neglect of their personal day-to-day hygiene.

Given the complexity and severity of these changes, diagnosis and management of depression in late life can further be complicated by the environment, individual beliefs, differences in depression outlook, mental awareness, cognitive ability, accessibility to healthcare etc. all of which are limiting factors for most rural community dwellers in Nigeria. Nigeria Demographic Health Survey [7] 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. Nigeria is currently experiencing a larger influx of aged people in rural communities than in urban areas primarily as a result of increased rate in rural-urban movements by the younger populations. This in turn facilitated an alarming increase in the total of older adults' resident in rural communities. Many of these communities' lack proper infrastructural facilities capable of meeting the health needs of the ageing population [8].

Blazer [9] approximated the occurrence of clinically significant depressive symptoms in community dwelling older adults at 8% to 16%. Unalterably, very few improvements have 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 standing at 26.3% reported by Olutoki, Olagunju, Adeyemi and Aging & Mental Health in 2013 given rise to the percentage of geriatric depression on record [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. Unfortunately, factors associated with the development of depressive disorder part of which forms the moderating variables for this study are reported exhaustively in literature. There are clear evidences that older adults are assailable to almost all of the risk factors of depression as much as the younger population. Contrastingly, older adults are variously exposed to other factors not peculiar to the young populace. Blazer and Hybes [11] classified these factors into three categories: the biological/hereditary factors; the psychological factors and the social/environmental factors.

Personality trait, one of the psychological risk factors can interfere with older adult's intrinsic attribute capable of determining their extrinsic dispositions towards health and eventual culpability to geriatric depression. For instance, the ability of an older adult to adjust to a stressful life event like widowhood or bereavement and their ability to process the stress and adjust accordingly is determined by their personality type. 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 type of the individual. Costa [12] presented the theory that proposed an explanation to personality traits reflected in 'neuroticism' as enduring and overly sustaining. His argument painted a fact that an individual's loss of interest in a once interesting activity, presentation of a sad outlook to life, and a constant wishful thought of death which are risk factors for depression are described in terms of the individual's personality traits.

These risk factors of depression observed either by the individual or a close relative according to Costa [12] can be indicated by the degree of apprehension, resentment, timidity, impertinence and culpability exhibited by the individual. 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 [13], confirmed that older adult's health decisions on mental health 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). In most Nigerian cultures, it is assumed that close relations like family members related to depressed older adult take up the social responsibility of taking health decisions on their behalf. Their contentment of the decisions taken by these close relatives invariably supersedes their thoughts. In some tribes in Nigeria, older adult's trust and reliance on spiritual or supernatural phenomenon strongly dictate their control beliefs. Community dwelling older adults in Nigeria 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 favours from ancestors or the spiritual realm [14,15].

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 cultural believers. This is particularly relevant in Nigeria especially in communities surrounded with diverse cultural and traditional assertions affirming the former belief in herbal therapies and concussion,

which seems to be appealing and realistic enough to be accepted as the immediate choice of health care [16].

The good news however is that, geriatric depression can be effectively managed in and out of a clinical environment with either psychotherapies, pharmacotherapies, electroconvulsive therapy (ECT) or more effectively psychotherapies can be combined with pharmacotherapies (antidepressants) for enhanced results [17,18]. Geriatric psychiatrists globally proposed the use of the combination of drugs with psychotherapies for effective outcome of a reduced depression [19]. Despite several advances at improving geriatric depression management in Nigeria through awareness and sensitizations [6], very limited percentage of older adults have been able to benefit from these advancements. Mental health care delivery system in most Nigerian rural communities is 'carved out' of the general health care [15] which is often accessible in the developed urban areas. Mental health institutions in Nigeria are strategically located in urban cities and can easily be counted in terms of numbers provided each state. In view of these challenges, this study is therefore interested in examining the effectiveness of laughter therapy and music intervention on the psychological management of Geriatric Depression among rural community dwellers in Oyo State, Nigeria.

Laughter therapy

Psychological effectiveness of laughter on health and general well-being was proposed by Dr. William Fry, a California psychiatrist considered one of the founding fathers of 'gelotology', 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 can have a therapeutic effect of increasing heart rate for an approximated time of five minutes [20]. Laughter therapy is a kind of interaction that exhumes laughter, facial radiance, it allows for easy non-verbal expression, it is an emotional channel that flawlessly enables social interaction. Laughter therapy employs a uniquely different approach from the generally acceptable treatment options previously employed for the management of depression.

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 has been confirmed in quite a number of studies [21-24]. Laughter therapy thoroughly explored the discourse of the mind-body divide that posited that both mind and body can be healthy on the condition that the psychological aspects of the brain be restored and relaxed by just having a mirthful laughter as it is in itself, very soothing [25]. Individual's differences, personality and social background determines the frequency of laughter as old age approaches [25,26]. While laughter is tagged the best medicine that costs less to nothing and does not require adherence; the frequency and opportunities for laughter varies for older adults according to their life's situations. There has been dearth of literature on the exploration of laughter as a therapeutic intervention on the emotional regulation of depressed older adults in Nigeria. Existing few studies explored the effectiveness of laughter therapy and depression

management in younger populations, studies on geriatric depression and laughter had been sparsely explored in the developed world and in clinical control trials.

Depression is a dysfunction of the mental state of the sufferer causing a distortion in thoughts over past failures. This could invariably arouse feelings of unworthiness resulting in self-restricting attitudes towards getting help. Owing to the multitudinous psychosomatic challenges faced by older adults as age progresses, certain factors like physical frailty, impairment in vision and hearing, cognitive abilities etc. constitute major limitations to the adoptability of interventions that requires deep intuition for mental health issues like depression. Ko and Youn, [24] reported that the usage of laughter therapy in managing geriatric depression and its combination with medications is a means of improving older adult's quality of life which could further enhance their daily functioning.

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 not need to be comic directors or comedians before careful integration of laughter into clinical practice is implemented. 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. Mora-Ripoll [23] listed some techniques guiding the proper use of laughter as a therapy as follows:

• Introduction of 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.

• Incorporating facial and body gymnastics into sessions. 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.

• Developing laughter and warm-up techniques. 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. The fitting strategy also controls laughter while carefully avoiding the nasal, facial attrition and tracheal fixation.

Music intervention

Structurally, music intervention is an 'admixture' of two words, ' music ' and ' intervention ' which requires different interpretations for further decipherability. Rose [27] investigated music as one of the craftiness concerned with combining musical rhythms with aesthetical imagination of thoughts, feelings and expressions. Music as an intervention involves the skills and expertise employed in applying musical sounds for strengthening and rejuvenating a relatively poor state of health. One of the bases for the use of music in therapy in most domains of health is in its allure to people of different ages and

cultures. Music creates an avenue for the exploration of innovative ideas and issues in relation with aging. Music intervention effectiveness has been established in various domains of health such as psychiatry, psychology, neurology, surgery and general geriatric care. Music has also been identified to be of great use in other realms of human and spiritual existence [27,28]. Music is used in sorcery, exorcism, during initiations, deliverance sessions, in human transitions etc. Studies on music globally, have confirmed the effectiveness of music listening in reducing depression [29,30].

Older adults will spontaneously react to a musical performance done when they were young and instantly initiate a debate on the record's gradual extinction from the current musical trend. Music changes the psychological and physiological state of the listener, it allows for social interaction indicating that listening to a relatable music has a strong potential for neutralizing the emotional state of the listener. Previous studies on the management of depression in Nigeria had explored the effectiveness of diverse empirically supported therapies but very few studies have investigated older adult's expressions and interpretations of music and its associating therapeutic influence. This study is interested in exploring the interaction between the influences of music listening, rhythmic interpretation on depressed older adult's emotions fostering a significant reduction in their depressive symptoms.

Music therapy has been largely accepted and adopted for use with depressed older adults in old people's home, healing homes, deliverance sessions, adult day care, and old people's health care centers. In an attempt to sustain functionality for depressed community dwelling older adults, evolving interventions and strategies are continuously experimented to address geriatric depression in their various environment considered to be their comfort zones with hopes of preventing more serious co morbid medical issues. The quest for an optimized and accessible psycho-educational strategy has invented the exploration of a therapeutic intervention in music. Established methods of depression management are appropriate with the geriatric population when and where accesses to treatment with a trained psychotherapist are available. However, incapacitated older adults who are limited environmentally or financially may not be able to access these services and hence opt for other management alternatives.

Foundations of the use of music intervention with depressed geriatric population is found in the ideation that listening to music is a redirected strategy that explains the process of channeling negative energy towards spiritual meditation which is a component of music. In managing geriatric depression unique features of music intervention which must be central to planning as highlighted in Hanser [31] include;

• The introduction of gentle dance steps to familiar music,
• Encouraging facial gestures to familiar and soothing music,
• Scertaining progression in muscle relaxation,
• Introduction of guided imagery to music of choice,
• Demonstration of slow and repetitive movement that could enhance deep relaxation or light nap,
• Encouragement of coordinated group movements to a rhythmic music by the participants and

• Participation in music listening activities that could enhance other forms of arts like drawing, painting etc.

Other factors like oversensitivity to the associating stigma of depression, fear of addiction and interference with other medical treatments, poverty, poor social support and so on discourage most rural community dwelling older adults from reporting depression. Furthermore, in the absence of specialized geriatric teams, very little (if not anything) can be done to promote the outcomes and management of geriatric depression in Nigeria. Older adult's multiple reports of physical and mental discomfort during diagnosis breeds contradictions and the medical professional who is constrained in terms of time and numerous competing priorities may not clearly decipher the patient's complaints. There is however sufficient evidence suggesting positive and quantifiable effects of psychotherapies on certain aspects of older adult's mental health. The value of psychotherapies as an exercise programme is reflected; but the suitability of these therapies among rural community dwelling older adults has not been adequately explored. There is paucity of research on the combined effectiveness of laughter and music listening as therapeutic interventions among community dwelling older adults. Studies available are in relation to complimentary or alternative medicine (CAM) which recognizes laughter as a therapy but which is seldomly considered effective among the geriatric population.

Hypotheses

• H1: There will be no significant main effect of treatment on geriatric depression.
• H2: There will be no significant main effect of personality trait on geriatric depression.
• H3: There will be no significant main effect of health locus of control on geriatric depression.

RESEARCH METHODOLOGY

Ethical approval

Administrative permission to conduct the research was given by the University of Ibadan Institutional Ethical Review Board (UI/UCH IRB). Letter of introduction obtained from Department of Guidance and Counselling, University of Ibadan was taken to the Ministry of Health at the state local government secretariat, Agodi, Ibadan. The approval to conduct the study was taken to the Primary Health Care Department of each local government selected for further approval.

Participants

The locale of the study was Oyo State, Southwest Nigeria. Three rural communities in three local government areas (LGAs) within Oyo State were purposively selected for the study. Ninety-four participants screened with the Geriatric Depression Scale (GDS- Short Version) were randomly assigned into Laughter Therapy Group: 29, the Music Intervention Group: 34 and the Control Group: 31. Treatment lasted eight weeks. Simple random sampling technique was used in selecting rural communities within these three 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 [32] who defined rural communities as neighborhoods with population of 20,000 people or less.

Study design

The study adopted a pretest-posttest, control group quasi-experimental design. Two experimental groups were exposed to Laughter and Music intervention therapies respectively. The control group was exposed to teachings on 'Safety Measures in Old Age'. All the three therapies were crossed with personality trait at five levels (extraversion, agreeableness, openness, neuroticism and conscientiousness) and health locus of control at three levels (internal, powerful others and chance health locus of control).

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 Yoruba 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 [33]. 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.

The Big Five Inventory BFI Questionnaire

This is a standardized psychological assessment instrument developed by John, Donahue and Kentle [34]. 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 et al. [34] are Cronbach alpha .80- and two-weeks test-retest of .76. Big Five Inventory has mean convergent validity coefficient of .75 and .85 with the Big Five Instrument authored by Costa and McCrea [35] and Golberg [36] respectively.

Multidimensional Health Locus of Control Scale

Health locus of control scale (HLCS) was developed by Crown and Marlow and was revised by Wallston, Wallston, Kaplan and Maides [37]. 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 likert 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 [37] reported test-retest reliability co-efficient of .71 in a study involving a sample of women who were involved in weight reduction programme. Salami as cited in Akomolafe and Popoola [38] reported test – retest reliability coefficient of .75 using Nigerian Students, a two week the pilot test with the geriatric population however recorded a reliability coefficient of .76

Geriatric Depression Scale – Short Form (GDS 15)

The GDS [39] 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 [39,40]. 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 [41]. 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 = .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.

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. Time and venue were further allotted to participants and their carerers for the screening. Participants were screened at the pretest phase using the Geriatric Depression Scale at this stage and allocated into laughter and music therapy groups and the control group respectively using the balloting process. At the treatment phase, participants were exposed to eight weeks (eight sessions) of treatment (Laughter Therapy and Music Intervention). 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". At the laughter therapy sessions, Yoruba theatre comedians known to the participants were invited to demonstrate the techniques involved in therapeutic laughter through well scripted comedy skits and hilarious gestures. The participants were encouraged to invite a minimum of two family members to make the atmosphere relatable and relaxing. The goals of the treatment at the music intervention group was achieved by the introduction of relatable musical choices. Participants were asked to indicate five music performances of their choice at the second session.

These musical records were played at intervals during and after each session. Participants were requested to invite family members into the sessions to make the atmosphere relatable. The musician and comedians 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 two experimental groups and the control group to obtain the treatment outcome results (posttest scores).

RESULTS

Data collected were analyzed using the Analysis of covariance, and the Scheffe Post-hoc analysis at 0.05 level of significance. ANCOVA was also 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.

HO1: There will be no significant main effect of treatment on geriatric depression.

Table 1: Summary of ANCOVA showing the significant main and interactive effect of Treatment group, Personality Trait and Locus of Control on Geriatric Depression of rural community dwellers. R Squared =0 .687 (Adjusted R Squared = 0.626).

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta. Sq
Corrected Model	7761.485	35	221.757	5.716	0	0.761
Pretest Depression	373.121	1	373.121	9.617	0.003	0.132
Main effect:						
Treatment	849.028	2	424.514	10.942	0	0.258
Health Locus of Control	521.249	2	260.625	6.718	0.002	0.176
Personality Traits	188.035	4	47.009	1.212	0.315	0.071
2-way Interactions:						
Treatment x HLOC	249.123	4	62.281	1.605	0.184	0.092
Treatment x Personality Traits	660.966	8	82.621	2.13	0.046	0.213
HLOC x Personality Traits	607.688	7	86.813	2.238	0.043	0.199
3-way interactions:						
Treatment x HLOC x Personality	259.756	7	37.108	0.956	0.471	0.096
Error	2444.151	63	38			
Corrected Total	10205.64	98	796			

Table 1 shows that there was significant main effect of treatment on the management of geriatric depression of rural community dwellers with (F2;63 = 10.94; P<.05, partial η 2 = 0.26). It is also observed that there was a variance of 76.1 percent

accounted for by the independent variables. This implies a significant main effect of treatment on geriatric depression of rural community dwellers. On the basis of this finding, the null

hypothesis was rejected. To find out the influence of the mean scores of the participants, Table 2 is presented as follows:

Table 2: Estimated Marginal Mean Score of Treatment of Geriatric Depression.

Treatment Groups	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Laughter Therapy	17.673	1.32	15.034	20.312
Music Intervention	20.601	1.283	18.036	23.166
Control	8.031`	1.359	5.315	10.747

For further clarification on the margin of differences between the treatment groups and the control group, the pair wise comparison of the adjusted mean was analyzed with the result presented in Table 3 presenting the pair wise significant differences between Laughter Therapy and Control, between Music Intervention and Control.

Table 3: Scheffe Post-Hoc Pair wise analysis showing significant differences between the treatment groups and the control group.

(I) Treatment Groups	(J)Treatment Groups	Mean Difference (I-J)	Std. Error	Sig p-value
	Music Intervention	-2.16	1.87	0.515
Laughter Therapy	Control	13.34*	1.91	0
	Laughter Therapy	2.16	1.87	0.515
Music Intervention	Control	15.50*	1.87	0
	Laughter Therapy	13.34*	1.91	0
Control	Music Intervention	-15.50*	1.8	0

Table 4: Scheffe Post-Hoc Pair wise analysis showing significant differences between the means of the treatment groups and the control group.

Treatment Groups	N	Subset for alpha=.05	
		1	2
Control	31	7.81	
Music Intervention	34		21.16
Laughter Therapy	29		23.31
Sig.		1	0.52

Relating from Table 4, it was revealed that after controlling for the effect of pre-measurement of geriatric depression, laughter therapy group with mean score (23.31) is higher than the music intervention group with mean score (21.16) and the control group mean score 7.81 respectively. By implication, the mean score of laughter therapy is more potent in reducing geriatric depression as a management option than music intervention. HO2 - There will be no significant main effect of personality traits on geriatric depression.

The results from Table 1 shows that there was no significant main effect of personality traits on geriatric depression with ($F_{4;63}$= 1.212, p>.05, partial $\eta 2$ =.071). Thus, the null hypothesis was accepted.

The result from Table 5 shows that there was a significant main effect of Health Locus of Control on Geriatric Depression among rural community dwellers with ($F_{2,63}$ =6.718, p<.05, partial $\eta 2$ = 0.176). Thus, the null hypothesis was rejected. This means that there is a significant difference among the chance,

powerful others and internal health locus of control of depressed older adults.

Table 5: Estimated marginal mean scores of personality traits on geriatric depression H_O3 - There will be no significant main effect of health locus of control on geriatric depression.

Personality Traits	$\bar{x}$	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Extraversion	11.288	1.748	7.796	14.781
Agreeableness	17.281	1.499	14.285	20.277
Openness	16.332	1.733	12.869	19.795
Neuroticism	15.573	1.528	12.52	18.625
Conscientiousness	14.462	2.013	10.44	18.484

DISCUSSION

The first hypothesis 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 and music interventions were effective in the psychological management of geriatric depression fostering a significant reduction effect. Though both treatments were effective, Tables 2 and 3 however clearly showed the margin of difference between the interventions. Results presented indicated that the group treated with music therapy had reduced geriatric depression compared to those treated with laughter therapy as revealed in their mean scores. The mean score of participants in music therapy group ($\tilde{x}$ = 20.60) showed they benefitted more in the training sessions than those in the laughter therapy group ($\tilde{x}$ = 17.67). This finding corroborates the conclusions of Cevasco, Kennedy and Generally [42], Chan [30], Chan, Mok and Tse [43] and Han, Kwan, Chen, Yusof, Chonh, Goh and Yap [44] suggesting that music therapy was effective leading to health promotion and happiness amongst the geriatric population.

In further corroboration, Lai and Good [29], in their findings reported that the potency of Music Therapy in enhancing the general health of older adults stressing the several physiologic effects of music as a coping mechanism for sleep quality of depressed older adults. Contrastingly however, the combined study of Madineh, Sanaz and Roghaieh [45], a quasi-experimental study of the effects of Music Therapy on Anxiety and Depression in patients living with cancer recorded variabilities in the influence of music on depression and age of the participants. In other words, stating that participants aged 30-45 living with cancer had a reduced depression after treatment in comparison to participants aged 65 and over. A review of studies assessing the influence of preferred music on attitudes of older adults afflicted with dementia written between 1993-2005 also affirmed to the positive influence of music on the reduction of agitated behaviours in demented older adults

with dementia. Although both studies adopted a relatively sample size of 30 participants within the age bracket, they both took into consideration the musical preference of participants and encouraged family participation and intervention which was partly adopted in this study.

Hypothesis two stated that there will be no significant main effect of personality traits on geriatric depression of rural community dwellers. Hypothesis two was accepted because main effect of personality traits on geriatric depression was not significant. The personality traits explored in the course of this study are the personality traits of the big five i.e extraversion, agreeableness, openness, neuroticism and conscientiousness. This 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 [46] found a strong direct role of extraversion, introversion and conscientiousness strongly predicting depression in younger populations. Just as Heady and Wearing [47] also reported that after analyzing the Big-Five traits, extraversion and introversion were the most potent predictor of geriatric depression.

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 [48] 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 Evans and Cox [49] 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 [47], and give unique importance to negative reactions. 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.

Hypothesis three was rejected because the result shown in Table 1 indicated that the significant main effect of health locus of control (HLoC) on geriatric depression was significant. This finding is in line with Zimmerman [50] 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 [50], in her study concluded that although rural or urban status did not directly affect HLoC and depressive symptoms, she suggested follow-up analysis that indicated the possibility due to the heterogeneity of individuals within rural and urban cities. The finding is in corroboration with Aflakseir and Abadi's [51] study where relationship was established between the components of health locus of control with depression in older adults aged 65 and over. Although their result established the correlation of chance and powerful others health locus of control with depression; it reported lower levels of HLoC amongst individuals aged 65 - 74 representing 60% of the total population used in the study. This study further established that the low internally perceived HLoC of older adults can strongly precipitate depression as health decisions for the geriatric population are either determined by their children, carerers or their social support circle. Older adults with low internally perceived HLoC 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 study suggests 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 HLoC, the stronger the health goals they anticipate for their wellness and the stronger their adherence to engage in health befitting behaviours even in the face of hardship as reporting in a nearby health centres when need be and checking with their doctors and lack [50,51]. 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 behaviour play a unique important role in their overall health status and general functioning. The firmer the inculcated belief control on their health, the higher their possibility of enlisting and sustaining efforts needed to adopt and maintain a positive health-seeking behaviour suchregularly for medical checkups.

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 rural 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 and music intervention were effective in managing geriatric depression among rural community dwellers. Although the two treatments were effective in managing geriatric depression, laughter therapy was more effective. Personality trait and health control of control did not moderate the effect of treatment of geriatric depression of rural community dwellers.

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