

## **SYNOPSIS OF THE STUDY**

### **Context of the study**

'Graying of the Nations' is a worldwide demographic phenomenon raising questions on the well-being and health care facilities and resources available to the elderly population. While thinking about global ageing the following figures must be kept in mind- the number of persons aged 60 years and older was 605 millions in the year 2000 whereas it is projected to reach 2 billion by 2050. Thus for the first time in human history over 60 population is going to be larger than the population of children (0-14 years). An estimated 279 million older population of the world (which is 60% of the world's older population) now live in developing nations. By 2030 this number is projected to become 690 million (71% of the older population of the world) (Robnet & Chop, 2010).

Population - ageing process is determined by the stage and rapidity of demographic transition. Ageing is determined by both fertility and mortality reductions. Early and quick initiation of demographic transition will lead to rapid ageing of the population. In general these transitions are universal and seemingly irreversible. This process has not yet been completed for many developing countries. Studies show that fertility transition from the traditional high levels to modern low levels is the primary cause of population ageing. The decline in mortality rate also plays an important role in population ageing. Though these reductions in fertility and mortality rates has been one of the major goals of civilisations mankind is not in a position to rejoice about this favourable demographic set up. Instead mankind is once again rocked by an age quake (Chakraborti, 2004). The situation can be called as a "demographic time bomb".

**Indian scenario of ageing**

According to census 2011 data the total population in India is 1210.6 million. People between the age group of 60-99 were 56.5 million during 1991 census and now in 2011 it is 103.2 million. People over 100 + is 0.6 million. Presently, India has around 90 million elderly and by 2050, the number is expected to increase to 315 million, constituting 20 percent of the total population. Three-fourths of the elderly live in rural India, of which 48 percent are women and 55 percent of them are widows. Nearly 70 percent of the rural elderly are dependent on others and their health problems increase with age. In addition to problems of illiteracy, unemployment, widowhood and disabilities, older women in India also face life – long gender based discrimination, resulting in differential patterns of ageing of men and women.

The Global Report on Ageing in the 21<sup>st</sup> century [2012] reinforces the observations made in India that there is multiple discrimination experienced by older persons, particularly older women, including inaccess to jobs and health care, subjection to abuse, denial of the right to own and inherit property, and lack of basic minimum income and social security (UNFPA & Help Age International, 2012).

Further, the majority of the people at 60 + in India are socially backward and economically poor. In addition there is also extreme heterogeneity in the demographic transition across the states in India. For example, the state of Kerala which had 11 percent of the elderly population in 2001 is expected to have 18 percent by the year 2026, with an absolute number of around seven million elderly. But Uttar Pradesh had only six percent of elderly in 2001 and by 2026 it will have

10 percent elderly population. But the absolute number of elderly in Uttar Pradesh is expected to be thrice that of Kerala.

### **Ageing in Kerala**

Kerala is one of the first states to reach an advanced stage in demographic transition. Number of births in Kerala is continuously declining and the youths migrate in large numbers in search of job opportunities due to highest unemployment rate among youth. Thus there is a rapid increase in the number of the elderly within the state (Bhat & Irudaya Rajan,1990).

A paper on unique ageing scenario in Kerala estimates that the size of the population in the age group of 60 years and above in the state is expected to increase from 33 lakhs in 2001 to 57 lakhs in 2021 and to 120 lakhs in 2061.40 percent of Kerala's total population will be the elderly by the year 2061. Of this, 6.7% would be in the age group of 60-69 years; 23.8 %in the age group of 70-79 years and 9.1 % in the age group of 80 years and above (Krishnakumar, 2012).

Ageing research is not well developed in Asian countries except in Japan. It is partly because of the cultural beliefs of Asians in family values and this makes everybody to think that family is the ultimate provider of care for the elderly. In the absence of institutional support for the elderly in most of the Asian countries, families will continue to take care of the elderly. At the same time family also has its limitations which are becoming evident. Social and economic development undermines the traditional values and number of children who should look after the elderly is less in number.

When the resources are limited the poor elderly will become a burden to their family especially if they suffer from chronic ailments demanding huge health care costs. Negligence of the elderly and poor quality of life are the results of these situations. Even in situations where there are resources available to look after the elderly several psychological barriers have come up resulting in their isolation and poor care of the elderly (Evans, Kiran & Bhattacharya, 2011).

As a solution for such problems we have followed the west in building up old age homes. When funds are a problem quality of care in old age homes become poor. Living outside one's own family is still a difficult proposition for us. Social status of the aged both in the family and in the society mainly depends on the economic status of them. Low economic status not only reduces the social status but also the health status of the aged.

There are a number of reasons which forces the aged to depend on old age homes or destitute homes like-social migration of younger generation, higher education, conflicts in the family, growing individualism, diminishing health of the elderly which reduces their physical capacity to work or earn etc. (Krishnakumar, 2012).

The increase in the number of elderly combined with the disproportionate rate at which they use medical resources, will require that health care providers become increasingly knowledgeable about the needs of geriatric patients and increasingly efficient in the evaluation and management of concerns unique to these patients (Evans et al., 2011).

**Need and significance of the study**

Adding life to the years that have been added to life is a significant challenge. But, ageing should not be viewed from a problem perspective alone; its potential must be recognized and realised. In India the revised National Policy for Senior Citizens (NPSC, 2011) recommends eight areas of intervention, namely income, security in old age, health care, safety and security, housing, productive ageing, welfare, multigenerational bonding, and enhancing involvement and participation of media on ageing issues. NPSC recognizes that outcome changes such as improvement in quality of life, socio-economic conditions and health of senior citizens can be brought about only through the collaborative efforts of the government, civil society and the private sector.

Nurses are the largest group of health care professionals in any country. By way of the Holistic nature of Nursing, Nurses can effectively involve in the care of the elderly irrespective of the agency they work with (whether government, private or as part of NGO). With ongoing economic development and resulting changes in the structure of family the elderly are left alone to face their deteriorating health status.

This has detrimental influence on the health of the elderly. According to 2011 census Kerala is the topmost state with high dependency ratio of the old (which is 196% of the population) (Census, 2011). Often the medical and social problems of the elderly are over looked and neglected by seeing them as a part of normal ageing. Unrecognized health problems are also more common among the elderly and they are the result of failure to report symptoms, denial of symptoms, under investigation and poor diagnosis by health care providers. Incontinence of

urine, depression-dementia, visual-hearing impairment and locomotors disability are the commonest among them. All these can affect the subjective well being of the elderly, can cause low morale and lead to further depression.

Adding to this burden of frailty and disability the elderly is all the more depressed and feeling lonely due to the fact that helpers are not available to look after the elderly living in their own homes or old age homes. Kerala's youth are unwilling to take up low-paid or unskilled jobs like functioning as domestic assistants or care giver assistance in situations. This adds to the amount of neglect, poor quality care of the elderly in households as well as in old age homes. Such a situation demands initiatives for 'active ageing'. Active ageing aims to extend healthy life expectancy and quality of life for all people as they age, including those who are frail, disabled and in need of care. Measures to help older people remain active are a necessity and not a luxury in all countries whether they are developing or developed. To highlight this issue WHO has also launched its 2012 World Health Day theme as 'Ageing and Health' with slogan as "Good health adds life to years" (WHO, 2012).

Regular moderate physical activity in older patients should be part of this healthy life style. Inactive people who became active in old age can still achieve substantial health benefits. Previously inactive older women or men who become active show a marked reduction in overall mortality (from any cause) compared with their sedentary peers.

Frailty and physical disabilities prevent the elderly from active exercises. Most of old age homes do not have any specific arrangements to engage its inmates physically active other than utilising them in household jobs in maintaining the old

age home itself. More over elderly lacks initiative to participate in any form of activity due to pain, psychological problems and depression. This shows lack of motivation.

Existing studies have shown an increased prevalence of depression among the institutionalized elderly (Nalini (2006), Gopal et al., (2009), Mathew & Manickaraj (2012), Tiwari et al., (2012), Hsu & Wright (2014)). Life style disorders like hypertension and diabetes are also reportedly high as age advances and they increase the risk of cardiovascular problems in the elderly often coupled with depression.

Even when the diseases are diagnosed, the elderly are put on a lot of medications and poly pharmacy makes a definite threat to the general health and well being of the older person. Ever increasing health care costs also adds to the depression of the elderly who do not have sufficient income or any form of financial sources other than the support from old age homes. This is a situation that forces search for inexpensive alternative forms of therapy which will not produce adverse reaction and which is inexpensive.

So far numerous researches on non-pharmacological treatments for those degenerative changes have been published. Among those non-pharmacological treatment laughter therapy is a noticeable psychotherapeutic intervention in depression and dementia of the elderly. Laughter Yoga is one kind of therapy recently developed by Dr. M. Kataria, an Indian physician. Laughter produces psychological as well as physiological benefits. For the past one and a half decade the Laughter Club concept of laughter exercise has been introduced to many populations, but it has found its greatest favour so far with the elderly. Laughter has

been purported to improve immune function, increase pain tolerance, and decrease stress response (Kataria, 2011). But therapeutic benefits of laughter on psychosocial variables require further clinical evidence. The present study is an attempt in this line.

Kerala with its unique features of ageing is the state with maximum old age dependency ratio. Within the state the district that are having highest problems are the district of Pathanamthitta followed by Alapuzha and Kottayam (Irudaya Rajan, 2000). Of the three Kottayam is having the highest number of old age homes. Therefore it would be apt to study the elderly inmates of old age homes of Kottayam District to see the psychosocial and physiological benefits of laughter yoga. No such reported study from Kottayam District has come to the notice of the researcher. Methodologically robust data need to be generated as clinical evidence for supporting laughter yoga. If sufficient research evidence can be generated Nurses and other professionals working with elderly clients in India can make use of this inexpensive and non-invasive therapeutic technique. This will help to improve the physical, psychosocial and spiritual well being of their elderly clients.

Looking after the elderly with dementia, depression or chronic disabilities is a challenge to the care givers. In most of the situations care giver role strain was found to be very high. This can result in burn out and low quality care which in turn will affect the elderly. While working with extremely vulnerable population like the elderly, nurse-patient interaction is critical to the patient's experience of dignity, self-respect, sense of self-worth and well being. These factors can significantly reduce depressive symptoms among the elderly. A context-specific interpersonal process like caring needs much of interpersonal sensitivity. More over positive staff



engagement was significantly related to patient's interest, motivation to participate and pleasure derived from the therapy. Laughter therapy will further have a positive effect even on the care givers.

### **Statement of the problem**

The degenerative changes of physiological and psychological functions of elderly people come with age. Population ageing, with wide implications for economy and society in general is a major demographic issue for India in the 21<sup>st</sup> century. Presently India has around 90 million elderly 12.6% of which is contributed by Kerala State alone (Census of India, 2011). Due to increased dependency of these people some of them are forced to take services from old age homes. Depression is one of the most common and most treatable of all mental disorders in older adults. It is a major health concern that is life threatening if unrecognized and untreated. In all countries measures are needed to help older people remain healthy and active. Laughter yoga is a simulated laughter technique which can offer both physiological and psychological benefits even to frail and disabled elderly who cannot practice other forms of physical exercises due to their physical limitations. This technique is without much adverse effects and it practically lacks contra indications. However, current empirical data for the benefits associated with simulated laughter is much more limited and further well designed research is warranted especially with the elderly living in old age homes. The health care community is yet to accept laughter yoga as a healing tool within the complementary/alternative medicine. In order to offer patients the benefits of laughter, health care professionals must be willing to break loose from conventional therapeutic constraints and they themselves must be able to laugh. Thus the present study is on *the effect of Laughter Yoga on selected*

*psycho physiological variables among the elderly clients residing in the old age homes of Kottayam district.*

### **Objectives**

1. To find out the effect of “Laughter Yoga” on morale of the elderly clients living in old age homes of Kottayam District.
2. To find out the effect of “Laughter Yoga” on depression among the study subjects.
3. To determine the effect of “Laughter Yoga” on subjective well-being among the study subjects.
4. To identify the effect of “Laughter Yoga” on selected physiological variables among the study subjects.
5. To identify the relationship between selected baseline variables and psychological study variables.

### **Null Hypotheses**

1. There is no significant difference in morale of the elderly clients living in old age homes undergoing Laughter Yoga (experimental group) and not undergoing the same (control group.)
2. There is no significant difference in depression among the control group and experimental group.
3. There is no significant difference in subjective well being among the control group and the experimental group.

4. There is no significance difference in the Respiratory Rate among the control group and the experimental group.
5. There is no significant difference in the Resting Heart rate among the experimental group and the control group.
6. There is no significant difference in the Blood Pressure between the experimental group and the control group.
7. There is no significant difference in Oxygen Saturation among the experimental group and control group.
8. There is no significant difference in Peripheral Skin temperature between the experimental group and the control group.
9. There is no significant difference in Electrocardiogram between the experimental group and the control group.
10. There is no significant association between the selected baseline variables and the psychological study variables.

### **Inclusion/Exclusion Criteria**

#### **Inclusion Criteria**

- Elderly clients who are willing to participate in the study and certified by a physician for physical fitness to participate in Laughter Yoga.
- Elderly clients who are seriously ill or suffering from a contagious disease or from a debilitating illness will be excluded.

### Operational definition of key terms

1. **Laughter Yoga:** This is a laughter therapy which combines Simulated laughing techniques with breathing exercise and developed by Dr. Kataria's school of laughter yoga in Mumbai, India.
2. **Selected psycho physiological variables:** The **physiological variables** are defined as measurable physiological changes occurring in the study subjects. Following are the physiological variables selected for the study:-
  1. **Resting Heart Rate** which will be measured in a subject who has rested for 10 – 15 minutes.
  2. **Blood Pressure**, systolic and diastolic readings of blood pressure.
  3. **Electrocardiogram**–The graphical representation of the cardiac conduction of the subject.
  4. **Respiratory Rate**- Rate of respiration of the subject.
  5. **Oxygen Saturation**- A reading of Oxygen Saturation of peripheral blood per pulse oxymetry which is measured by a standardized patient monitor attached to the finger tip of a subject.
  6. **Peripheral Skin Temperature**-The measurement of forearm temperature using a temperature probe on the subject.

The physiological variables 1-6 were measured by a standardized BPL patient monitor.

### **The Psychological Variables**

1. **Morale:** Moral and mental condition of the subject as measured by Philadelphia Geriatric Centre Morale scale.
2. **Depression:** An emotional condition either neurotic or psychotic characterized by feelings of hopelessness inadequacy etc., which is measured by Geriatric Depression Scale and Hamilton Rating Scale for depression.
3. **Subjective wellbeing:** The subjective report of a state of well – being by the study subject which was measured by WHO well being index.

### **Methodology in brief**

The **design** adopted by the researcher for the present study is basic pre test post test experimental design with repeated measurement in between the intervention at specific time intervals.

Elderly clients who are 60 years and above living in randomly selected old age homes from Kottayam district are the sample for the present study. The sampling technique used for the present study is cluster sampling. The old age homes are scattered throughout the five talukes of the district. It is not easy to get a sampling frame of subjects due to this reason. If samples from the control group and experimental group are selected from the same home there is possibility of sample contamination especially when interventions like laughter yoga is administered. Therefore cluster sampling which is a type of probability sampling was found most suitable in this study. Out of the five talukes of Kottayam district two talukes were selected randomly by lottery method. Kottayam and Meenachil talukes were selected randomly. Two old age homes from Kottayam taluk were selected in stage

two by lottery method as the experimental group and two old age homes from Meenachil taluk were selected as the control group. All inmates who were eligible to participate in the study (as per the inclusion criteria) from all four clusters were selected as samples for the study. Based on the sampling criteria the researcher got one hundred and fifty three subjects for the present study.

**The following instruments were used for the study:-**

1. Baseline data sheet.
2. The Philadelphia Geriatric Centre Morale Scale (Lawton, 1975).
3. The Geriatric Depression Scale (Yesavage, J.A.etal., 1983).
4. Hamilton Rating Scale for Depression (Hamilton, M., 1960).
5. WHO (Five)-Well-Being Index (1998 version) (Psychiatric Research Unit, WHO Collaborating Centre in Mental Health).

Researcher is a certified Laughter Yoga therapist. After obtaining informed written consent from the eligible subjects the researcher administered the data collection instruments individually for collecting the pre test data. After the interviews with all the selected subjects were over the small groups in different blocks were identified. There were about 4 subgroups in all selected old age homes. Three volunteers who had completed B.Sc Nursing course and who were interested in laughter yoga were given training to carry out the sessions and to measure the physiological variables using patient monitor along with the researcher. Pre test scores were obtained by using above mentioned scales administered by the investigator for the experimental group and control group. The researcher also monitored the psychological variables of the subjects. Laughter Yoga was

administered for the time duration of 30 minutes every day for a period of 8 weeks in a cluster. The subjects were given a resting time of 20 – 30 minutes and post test of physiological measurements were done. Laughter yoga was administered 6 days a week with one day break, with the researchers or volunteers trained for administering laughter yoga. The subjects could do it all seven days individually if they wanted. Subjects were evaluated on the above mentioned psycho physiological variables at the end of 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> weeks of laughter yoga. The control group did not receive any treatment. The measurements were repeated for the control group during the same time interval with the experimental group.

**The data collected were analyzed using the following statistical techniques**

1. Frequency and percentage were tabulated for baseline variables
2. Changes in psychological variables between pre testing and post tests were computed with frequency and percentage and Man-Whitney test to compare the control group and experimental group.
3. Within group comparisons from pre tests to post tests for the psychological variables for the control and experimental group were done with Friedman test.
4. The experimental and control group were compared on physiological variables from pre tests to post tests with Man-Whitney test and Friedman test.
5. The association between psychological and socio demographic variables were studied using Chi-square test (Polit & Beck (2012), Polit (2010), & Indrayan (2008)).

## **Major Findings**

The major findings that have emerged from the present investigation are given below in separate titles.

### **Baseline variables**

1. Majority of the participants were between the age group of 60 - 70 years (43.1%). 70-80 years old and 80 and above (excluding the upper age limit) were found to be 28.1% and 28.8% respectively.
2. 58.2 % of participants were females.
3. 58.2% of subjects were Christians, 41.2% Hindus and 0.7% were Muslims.
4. 61.4% of people were just literate and having primary level of education only. 19.6% of subjects were illiterate.
5. 33.3% of subjects were single, 40.5% were widowed, 10.5 % were separated, 9.2% were married and 5.9% were divorced.
6. 51% of the participants (excluding single Individuals) were without children.
7. 43.1% of the subjects had a voluntary admission to old age home and the majority 48.4% were placed by relatives or others. 8.5 % were found to be forcefully placed by own children in old age homes.
8. 46.1% of subjects were staying in the old age home for more than four years. 23.7% were having less than one year of stay.
9. 80.4% of subjects were suffering from chronic ailments.



10. 79.1% of subjects were independent regarding activities of daily living. 17% were partially dependent and 3.9% were using assistive devices like walker, wheelchair, crutches, cane etc.
11. Subjects in the experimental group and control group were statistically similar regarding the baseline variables except in the nature of admission to old age home ( $p= 0.045$ ). (There found a difference in the number of subjects forced by their children for old age home placement higher in control group).

### **Psychological variables**

12. There was no difference between the control group and experimental group during pre test regarding subjective well-being ( $z = -1.450$ ,  $p= 0.147$ ). But the groups were found to be different regarding morale ( $z = -1.963$ ,  $p=0.050$ ), depression score on GDS ( $z = -2.621$ ,  $p=0.009$ ), depression score on Hamilton Rating Scale ( $z = -2.600$ ,  $p=0.009$ ).
13. The mean rank of morale of the experimental group from pre test to post test for 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> weeks were significantly different. ( $\chi^2=30.218$ ,  $df = 4$ ,  $p=0.0001$ ) showing improved morale of the elderly who underwent laughter yoga.
14. 80.60% of the control group subjects and 64.80% of the experimental group showed low morale scores on PGCMS.
15. The mean rank of morale of the control group from pre test to post tests at 2<sup>nd</sup> week, 4<sup>th</sup> week, 6<sup>th</sup> week and 8<sup>th</sup> week were not statistically significant ( $\chi^2 = 3.520$ ,  $df= 4$ ,  $p= 0.475$ ). This shows that there was no change in morale among the control group.

16. 33.80% of the experimental group and 78.70% of the control group subjects remained with low morale after 8 weeks.
17. 48.40% of the control group and 30.80% of the experimental group showed severe depression scores on GDS. 35.50% of the control group subjects and 36.30% of the experimental group subjects showed mild depression on GDS.
18. Within group comparison of subjects on Geriatric Depression Scale showed a reduction in level of depression from pre test to post tests ( $\chi^2 = 38.099$ ,  $df=4$ ,  $p= 0.0001$ ) for the experimental group.
19. Within group comparison of subjects on Geriatric Depression scale showed an increase in level of depression among the control group ( $\chi^2 = 17.191$ ,  $df=4$ ,  $p= 0.002$ )
20. After eight weeks of laughter yoga only 2.60% of experimental subjects reported severe depression on GDS while 62.30% of the control group reported severe depression.
21. 40.30% of the control group subjects and 24.20% of the experimental group were found severely depressed on Hamilton Rating Scale for Depression scores.
22. Experimental group showed a reduction in depression on Hamilton Rating Scale from pre test to post tests ( $\chi^2 = 62.290$ ,  $df=4$ ,  $p= 0.0001$ ).
23. Within group scores of depression on HRS for the control group showed no difference up to 4<sup>th</sup> week but the 6<sup>th</sup> week and 8<sup>th</sup> week depression scores were

high for the control group This show that the control group subjects remained depressed ( $\chi^2 = 5.875, df = 4, p= 0.208$ ).

24. 50% of the control group remained severely depressed whereas none of the experimental group was found severely depressed on HRSD after eight weeks of laughter yoga intervention.
25. 67.70% of the control group and 56% of the experimental group showed poor well-being on WHO - (5) Well-Being Index.
26. The experimental group and control group differed significantly in the well-being scores in all post tests showing improvement in well-being among the experimental group ( $z = -5.730, p= 0.0001$  for 2<sup>nd</sup> week)  $\chi^2 = -5.732, p= 0.0001$  (4<sup>th</sup> week),  $z = -7.806, p= 0.0001$  (6<sup>th</sup> week)  $z = -8.464, p= 0.0001$  for (8<sup>th</sup> week).
27. After eight weeks of laughter yoga intervention 93.50% of the experimental group reported good well-being whereas 77.00% of the control group reported poor well-being.

### **Physiological variables**

28. There was no statistically significant difference between the control group and experimental group on Physiological variables at the time of pre test.
29. There was no statistically significant difference in respiratory rate between the control and experimental group, up to the 6<sup>th</sup> week ( $z = -1.129, p=0.259$  (pre test),  $z = -0.453, p=0.651$  (2<sup>nd</sup> week),  $z = -0.269, p=0.788$  (4<sup>th</sup> week),  $z = -0.782, p=0.434$  (6<sup>th</sup> wk). But there was statistically significant difference between the experimental group and control group at 8<sup>th</sup> week ( $z = -2.111, p=0.035$ ).

30. Within group comparison of respiratory rate among the control group using Fried man test showed no significant difference ( $\chi^2 = 9.041$ ,  $df=4$ ,  $p=0.060$ ) while experimental group showed significant within group difference ( $\chi^2 = 10.063$ ,  $df=4$ ,  $p=0.039$ ).
31. The resting heart rate showed no statistically significant difference between the experimental and control group, except for the second week. ( $z = -2.809$ ,  $p=0.005$  (2<sup>nd</sup> wk),  $z = -1.198$ ,  $p=0.231$ (pre-test),  $z = -1.472$ ,  $p = 0.141$  (4<sup>th</sup> wk),  $z = -0.685$ ,  $p = 0.0493$ (8<sup>th</sup> wk)).
32. Within group comparison of heart rate showed significant change in the control group compared to the pre test level showing fluctuations in the heart rate for the second and fourth week ( $\chi^2 = 10.750$ ,  $df=3$ ,  $p=0.013$ ).
33. Within group comparison of experimental group on resting heart rate showed no statistically significant change ( $\chi^2 = 1.320$ ,  $df=3$ ,  $p= 0.724$ ).
34. There was no statistically significant difference between the experimental group and control group in pre test blood pressure measurements ( $z = - 0.909$   $p= 0.364$ ), and during the 1<sup>st</sup> post test ( $z = -1.306$ ,  $p= 0.191$ ). The mean rank of blood pressure measurement was different for the experimental group between pre test and post test (67.56 and 77.62 respectively) showing an improvement in BP within 2 weeks of Laughter Yoga.
35. The mean rank of Blood Pressure for the experimental group remained more or less the same during 4<sup>th</sup> week, 6<sup>th</sup> week and 8<sup>th</sup> week (77.74, 77.51, 77.25 respectively) showing sustained improvement in Blood Pressure among experimental group showing they were relaxed physiologically.

36. The mean rank of Blood Pressure for the control group reduced progressively showing increased blood pressure readings and stressed state for control group members (66.48, 64.60, and 59.72 respectively for 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> weeks).
37. There was statistically significant difference between the experimental group and control group in Blood Pressure measurements ( $z = -2.156$ ,  $p = 0.031$  (4<sup>th</sup> week),  $z = -2.451$ ,  $p = 0.014$  (6<sup>th</sup> week)  $z = -3.197$ ,  $p = 0.001$  (8<sup>th</sup> week)
38. But both groups showed no within group differences on Friedman test for the blood pressure variable. ( $\chi^2 = 6.069$ ,  $df = 4$ ,  $p = 0.194$  for the experimental group and  $\chi^2 = 4.917$ ,  $df = 4$ ,  $p = 0.296$  for the control group).
39. There was no significant difference between the experimental group and control group in Oxygen saturation ( $z = -0.318$ ,  $p = 0.750$  (wk.2),  $z = -0.231$ ,  $p = 0.817$  (wk.4),  $z = -0.942$ ,  $p = 0.346$  (wk.6),  $z = -1.603$ ,  $p = 0.109$  (wk.8)).
40. Friedman test showed no statistically significant difference in oxygen saturation within the experimental and control group ( $\chi^2 = 2.211$ ,  $df = 4$ ,  $p = 0.697$ (control),  $\chi^2 = 5.223$ ,  $df = 4$ ,  $p = 0.265$  (experimental).
41. There is no significant difference in peripheral skin temperature between the experimental group and control group up to 6<sup>th</sup> week and there was a difference in 8<sup>th</sup> week where experimental group showed a reduction in skin temperature ( $z = -2.521$ ,  $p = 0.012$ ).
42. A significant within group difference in peripheral skin temperature was found in the control group ( $\chi^2 = 16.214$ ,  $df = 4$ ,  $p = 0.003$ ) while there was no

significant within group difference for the experimental group ( $\chi^2 = 9.176$ ,  $df=4$ ,  $p=0.057$ ).

43. There is no significant within group change in the control group ( $\chi^2=5.231$ ,  $df=4$ ,  $p=0.264$ ) and experimental group ( $\chi^2 = 5.103$ ,  $df=4$ ,  $p=0.277$ ) on Friedman test regarding ECG recordings.
44. There is no significant difference between the ECG recordings of the experimental group and the control group ( $z = -0.048$ ,  $p= 0.962$  (pre test),  $z =- 1.501$ ,  $p=0.133$  (wk.2),  $z=-1.563$ ,  $p=0.118$  (wk.4),  $z=0.709$ ,  $p= 0.479$ , (wk.6),  $z=-1.129$ ,  $p= 0.259$  (wk.8)).

#### **Association between Baseline variables and Psychological Variables**

45. There is no significant association between age and morale of the elderly residing in old age homes of Kottayam district (Likelihood ratio= 5.877,  $df= 4$ ,  $p=0.209$ ).
46. There is significant association between age and depression among the elderly subjects ( $\chi^2 = 10.493$ ,  $df=4$ ,  $p= 0.033$ ) and as age advances proportion of subjects in severe depression group increases.
47. There is no significant association between age and subjective well-being ( $\chi^2=5.746$ ,  $df= 2$ ,  $p=0.057$ ).
48. There is no significant association between gender and morale ( $\chi^2 =4.562$ ,  $df= 2$ ,  $p= 0.102$ ).
49. There is significant association between gender and depression. Severe depression was proportionately high among males ( $\chi^2 = 9.462$ ,  $df = 2$ ,  $p= 0.009$ ).

50. There is significant association between gender and subjective well-being. Male subjects are having poor well-being compared to females ( $\chi^2 = 13.879$ ,  $df = 1$ ,  $p = 0.0001$ ).
51. There is no association between religion and morale (likelihood ratio=5.239,  $df=4$ ,  $p=0.264$ ), depression (likelihood ratio = 5.322,  $df=4$ ,  $p = 0.256$ ) and subjective well-being (likelihood ratio= 0.651,  $df=2$ ,  $p=0.606$ ).
52. There is no significant association between level of education and morale (likelihood ratio=10.608,  $df=10$ ,  $p=0.389$ ), depression (likelihood ratio =6.875,  $df=10$ ,  $p=0.737$ ) and subjective well-being (likelihood ratio =3.668,  $df=5$ ,  $p=0.598$ ).
53. There is no significant association between marital status and morale ( $\chi^2 =10.776$ ,  $df=8$ ,  $p=0.215$ ).
54. There is significant association between marital status and depression among the elderly clients living in old age homes. Compared to single subjects married subjects reported more depression. (likelihood ratio = 22.904,  $df = 8$ ,  $p < 0.003$ ).
55. There is no significant association between number of children and morale (likelihood ratio=15.497,  $df=16$ ,  $p=0.410$ ), depression (likelihood ratio =23.474,  $df=16$ ,  $p=0.102$ ) and subjective well-being (likelihood ratio= 6.782,  $df=8$ ,  $p=0.751$ ).
56. There is significant association between natures of old age home placement and morale and depression. Those who were forced by children to stay in old age homes had significantly low morale (likelihood ratio = 24.592,  $df= 1$ ,

p= 0.0001) and high level of severe depression and placed by relatives and others showed mild to moderate level of depression. (likelihood ratio = 17.699, df =4, p= 0.001) Same observation is found with scores of Hamilton Rating Scale for Depression (likelihood ratio = 18.601, df = 6, p= 0.005).

57. Placement by children in old age home showed an association with poor well-being at 0.10 level (likelihood ratio = 5.401, df= 2, p= 0.067).
58. There is no significant association between duration of stay in the old age home and depression (likelihood ratio =10.410, df=8, p=0.237), and well-being (likelihood ratio 4.439, df=4, p=0.350).
59. There is significant association between duration of stay in the old age home and morale (likelihood ratio = 16.221, df=8, p= 0.39). Subjects who were in the category 2-3 years of stay in old age home had better morale than others.
60. Present study shows no significant association between chronic illness and morale (likelihood ratio=0.728, df=2, p=0.685), depression ( $\chi^2 = 1.396$ , df=2, p=0.498) and subjective well-being ( $\chi^2 =0.869$ , df=1, p=0.351).
61. There is significant association between physical dependence morale (likelihood ratio = 16.992, df = 4, p= 0.002) and depression (likelihood ratio = 12.211, df = 4, p= 0.016). Elderly who are dependent on others for activities of daily living had low morale and high level of depression.
62. Present study shows no significant association between subjective well-being and physical dependence (likelihood ratio=5.101, df=2, p=0.078).



63. No significant association is observed between number of visitors to morale (Likelihood ratio=4.846, df=4, p=0.237), depression (likelihood ratio =2.466, df= 4, p=0.651) and subjective well-being (likelihood ratio=2.343, df=2, p= 0.307).

### **Implications of the study**

Based on the findings of the study the following are the implications for Nursing and other health care professions dealing with the elderly clients in general and elderly living in old age homes in specific.

The normal ageing process inevitably brings physical and psychological changes in the elderly. Depression is not a part of ageing though the study results showed a good number of subjects suffering from depression. The study shows evidence of undetected depression even when the study subjects were in contact with health care professionals- doctors as well as nurses many times in an year. Use of short and simple instruments periodically to detect depression among the institutionalized elderly is therefore a strong implication.

A careful intake interview and subsequent watchfulness from the part of Nurses and other care takers are implied since the study shows evidence for severe depression among the elderly who are forcefully placed by their children in old age homes and moderate depression among elderly who are placed by relatives or others compared to the elderly who took voluntary admission. The elderly in advanced age group, the elderly who are married but not able to live with the spouse and the elderly males are also in need of special assessment and attention since they tend to suffer from depression, poor well-being and low morale as evidenced by the present study. The inmates who are newly placed and who are staying for more than three

years need special attention from the care givers of old age homes since these people were found to be suffering from low morale. Another group who deserves special attention are the inmates who were dependent on others for activities of daily living when compared to elderly who were independent or using assistive devices since they were found to be suffering from severe depression and low morale.

The study results show evidence for the effectiveness of laughter yoga as a therapeutic intervention in reducing or ameliorating symptoms of depression, in improving the morale and subjective well-being of the old age home residents. Moreover the evidence supports the use of this intervention as a safe method of physical activity which helps in improving the physiological balance mainly the haemo-dynamic stability. The study results further shows the acceptance of this therapy by the elderly and the care givers. Therefore the therapeutic use of Laughter Yoga for the benefit of the elderly on a regular basis in old age homes is implied. The other benefits noticed by the researcher for this therapy are positive rapport, improved inter-personal relationships, reduction in power struggles, arguments and conflicts, between the elderly themselves and also between the elderly and care givers. The spirit of Laughter Yoga seemed to help for the development of a more positive, joyful, forgiving and peaceful atmosphere where the staff and the inmates were found to be relaxed. Nurses can give attention to their elderly clients within a short time through this techniques and it is found identical to group psycho therapy in its approach, methods, and benefits. Improved eye contact, physical proximity, playfulness, gestures of sharing, making fun without offending each other etc. were attained through this simple therapeutic technique that also promoted group identity and we feeling. Elderly started looking for their fellow group mates for organizing

the sessions. Appreciation laughter was found to be enjoyed by everyone, which simply acknowledged the presence and participation of every group member. Appreciation seems to be a very rare thing happening in day to day activities of the old age homes and when it was given in a subtle manner through this therapy it touched the elderly. Why do the care givers or authorities fail to identify the need for appreciation in everyday living of an elderly individual? Is the lack of appreciation a major factor like loneliness in producing low morale, poor well-being and depression among the elderly? Probably appreciation of the elderly may emerge as an ante dote to depression.

The therapeutic benefits reaped by the elderly had its marks on the care givers too. Hence it is implied as an ante dote for stress and burn out among Nurses and other care givers working in old age homes and similar settings with chronically ill clients. Another implication of the study is the need for organizing continuing education programmes/training programmes for Nurses and other care givers working in old age homes regarding geriatric depression, its early detection and effective management. The study results shows that depression goes unnoticed by the care givers. Empathy was found missing in several interactions among care givers and awareness programmes may help to sensitize the care givers in understanding the problems of the elderly in a better way. This may help in improving communication and care giver – elderly interaction. Therefore organizing regular programmes for improving the emotional milieu of the old age homes are implied in the study results. This also poses another research question- Why do the care givers fail in empathising with the elderly old age home inmates? Is it related to the factors within the system? or the elderly themselves? or within the care givers?

The elderly were more than thankful about the shelter, food, clothing and essential medical aid they receive in old age homes. But the study results shows evidence for the depth of hopelessness and worthlessness the old age home inmates were suffering from. The low morale and poor well being are the indicators of this state which ultimately leads to severe feelings of depression. In spite of religious services and spiritual activities organized in old age homes the essential human touch was found to be missing in several instances. Therefore movements to improve the attitude towards institutionalized elderly among the care givers are strongly implied. Psychiatric Nurses by virtue of their training will be able to take up the initiative and leadership in organizing such activities for the old age home authorities and care givers. A collaborative client advocacy role of mental health Nurses with special training in geriatric care is therefore implied for further career development, course development and human resource development in general in the field of geriatric Nursing for a Nurse educator. Policies that will help in materializing the above mentioned points are a strong implication for the Nurse administrator. Independent Nurse Practitioners in Geriatric Care is implied as the need of the hour in India.

Development of tools to assess the gender specific issues in depression among institutionalized elderly is another implication for future research which may help to understand the nuances of geriatric depression in a culture specific way.

- Use of simple research tools to detect geriatric depression can be introduced to the syllabi of all Nursing Courses starting from multipurpose health workers course to post-graduate courses in Nursing. The study findings support this implication.

- Alternative therapies are gaining momentum in geriatric care and the present study support the introduction of Laughter Yoga as an alternative therapy in the syllabi for Nursing Courses.

Though Laughter Yoga is a simulated technique which claims to laugh for no reason, unlike using jokes that can go old and therefore ineffective after some time, the elderly expressed the need for newer techniques of laughter when they were practicing laughter yoga on a continuous basis. Therefore development of newer techniques that are user friendly and safe for the elderly clients by the practitioners of Laughter Yoga is another implication of the study.

Further research in the area of Laughter Yoga can produce evidences to strengthen this method which is inexpensive and without many side effects is another implication of this research.

### **Suggestions for further Research**

Based on the findings of the findings of the present study the following are the suggestions for further research in this area.

1. Similar study can be planned for a longer duration like one year follow up.
2. Laughter Yoga can be compared with any other method of group therapy and with a control group.
3. Laughter Yoga can be compared with cognitive behaviour therapy and group psychotherapy in treating clients with depression in hospital settings, old age home settings and in community settings.

4. Similar study can be planned for elderly people living in their own homes with the help of residents' associations, senior citizens' forums, religious organizations or social clubs.
5. The physiological effect of Laughter Yoga on elderly clients can be studied in a laboratory setting with continuous monitoring of physiological variables throughout the therapy.
6. Effect of Laughter Yoga on cardiac ejection function among the elderly and the healthy subjects can be studied.
7. The effect of Laughter Yoga on psychoneuroimmunology can be studied among the elderly and clients from different age groups.
8. Effects of Laughter Yoga on other variables like glycaemic level, hyperlipidaemia and cortisol level for the elderly and other subjects can be studied.
9. Effect of Laughter Yoga on sleep, appetite, drug taking behaviour, and complaints of pain can be studied among the elderly.
10. Effect of Laughter Yoga for specific conditions like asthma, obesity, depression, cancer and rheumatoid arthritis can be studied among different age groups.
11. Effect of Laughter Yoga on work place stress, anxiety, insomnia, chronic fatigue and anger can be studied in various subjects.
12. The experience of Laughter Yoga among the elderly and their care givers can be studied using qualitative research methodology.