Chapter-5

DISCUSSION
This chapter deals with the discussion of study findings in the light of objectives and hypothesis of the study. The study was to assess the effect of Laughter Yoga on selected psycho-physiological variables among the elderly clients residing in the old age homes of Kottayam District.

The following hypothesis were tested at 0.05 level of significance.

1. There is 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 significant difference in depression among the experimental group compared to the control group during the post intervention measurements.

3. There is significant post test difference in subjective well-being in the post test scores of the control group and experimental group.

4. There is significant post test difference in the respiratory rate among the control group and experimental group.

5. There is significant post test difference in the resting heart rate among the control group and the experimental group.

6. There is significant post test difference in blood pressure among the control group and experimental group.

7. There is significant post test difference in Oxygen saturation among the experimental group and the control group.
8. There is significant difference in post test values of peripheral skin temperature between the experimental group and control group.

9. There is significant post test difference in Electro Cardio Gram between the experimental group and the control group.

The results were presented in the following four sections.

Section 1 Description of baseline variables of the elderly clients residing in old age homes.

Section 2 Assessment of psychological variables.

Section 3 Assessment of physiological variables.

Section 4 Association between selected psychological variables with the baseline (Socio demographic) variables.

Discussion on baseline variables:-

Age

Out of 153 subjects enrolled for the study 66 (43.1%) were between the age group of 60 to 70 years, 43(28.1%) were 70 - 80 years and 44 (28.8%) were 80 and above.

A study reported from Mysore (Nagaraj et al. 2011) among old age home residents reported 72.96 ± 7.62 years as the average age of subjects. Narkhede et al. (2012) (did a study on depression in elderly inmates living in old age homes in Gujarat) reported 31.9% of 314 elderly were in the age group of 65-69 years. Ravindran (2012), had reported that 22 (33.33%) of the 50 samples selected from old age homes were within the group of 71-75 years. Chakraborti (2004) reported that the projected rise of 80 + elderly will be 18.9 percent by 2050. It is observed
that the age pyramid of the global population is changing in a big way in favour of the oldest among the old. Current study shows the same evidence when we look at the percentage of people above 70 years of age which is 87 (56.9%). The problem of oldest old is an important consideration in planning the health care and nursing care needs of those elderly. Present study has 28.8% of elderly above 80 years. This is in par with the observation of WHO that the oldest old is the fastest growing sub group of the population in many countries (Varghese and Patel 2005).

**Gender**

Considering the distribution of elderly based on gender, for the present study 89 (58.2%) were females and 64 (41.8%) were males. Raveendran (2012) had reported that 53.33% of old age home subjects were females compared to 41.1% males. Chakraborti (2004) had discussed this phenomenon as feminisation of the elderly. Since 1950 the percentage of those aged 60 plus was around 55 percent females and this state is expected to change for the next 50 years. In 1995, 77 percent of the centenarians were women and by 2050 this number is expected to increase to 84 percent in different regions of the world. The highest number of elderly women of all categories (60 plus, 80 plus and 100 plus) are seen in Europe as per the Demographic yearbook 2002 series. In all Asian countries, except Bangladesh, Iran, Maldives, Nepal, Oman, Bahrain, Saudi Arabia, Kuwait, UAE and Qatar, women constitute over 50 percent of the 60 plus population. (Chakraborti 2004). This shows the need for further planning of health care and social benefits for the elderly women considering their unique needs and problems.
Religion

Distribution of subjects based on religion showed that 58.2% (89) of the subjects were Christians and 41.2% (63) were Hindus. Only 0.7% (1) was Muslim. Raveendran (2012) had reported that 45 (75%) of subjects in the old age home were Hindus, 10 (16.67%) were Christians and 5 (8.33%) were Muslims. Nalini (2006) had reported a highest percentage of 42.56% subjects in old age home belonging to Christian religion and 41.72% belonging to Hindu religion.

For the current study all the clusters included for the study were run by Christians and this could be a reason for observing a higher percentage of Christians among the subjects. The other researchers have reported the study from institutions run by non Christian organisations.

Literacy status

Majority of the subjects were just literate (not studied up to SSLC-) 94(61.4%) and 19.6% (30) subjects were illiterate. People with graduation (2.0%) and PG (2%) were also observed in the current study.

Ravindran (2012) had reported that 55 (91.66%) of subjects had only primary education. Elderly illiteracy is a problem in most of the developing countries. Out of these illiterates women constitute a major share. Over the years there is a change in the literacy rate among the elderly population. India is still with low elderly literacy rate. For the year 2010 the UN estimate showed 42.3% illiteracy among males and 73.1% in females for 60-64 age group. 65-69 age group had 46.6% and 77.7% in males and females respectively. 70 plus males had a illiteracy rate of 51.0% and 81.5% for the females. Over the years the rate of illiteracy is reducing among the elderly population but comparatively it is high among females.
(Chakraborti 2004). Most community studies have found that socio economically and educationally disadvantaged subjects are at greater risk to suffer mental disorders. A community study of depressive disorders in North India have found old age and illiteracy as risk factors for depression. There was no gender difference among the illiterate, but among the literate higher depressive scores were found among women (Ganguli et al. 2000).

**Previous Occupation and source of income**

Illiteracy affects one’s chances of having a good job. For both the experimental and control group subjects of the present study were surviving on daily wages jobs or jobs with no retirement benefits or pension. Only 10.50% had office jobs or a salaried employment that too without much retirement benefits. 31.40% were coolies and 26.14% of female subjects were housewives. 9.80% of females were house maids and most of them were single. 8.50% had no jobs.

With poor literacy status and being housewives women were dependent on their family for survival and it is a cause for their socioeconomic backwardness and low social status (Varghese and Patel, 2005). Thus older women were found to be having more psychological distress (Jayaprakash 1997).

Majority of the current study samples were not sound educationally and they were not having much gainful employment. Hence 81.05% of the current study subjects had no source of income and they were totally dependent on the old age home for their survival. 3.27% had some form of personal income. In addition to support from old age home, 5.23% had support from children, 4.57% had support from a relative, 5.88% were getting old age pension. Nalini (2006) had reported that 60.93% of her study subjects from old age home had personal income. In her study
majority of the clients had moderate level of depression only. Nani (2014) had reported that 73.8% of her subjects from community dwelling elderly had economic problem as the number one cause of depression. Majority of her study subjects were found to be suffering from severe depression. Nair (2010) has also reported financial problem as a major social problem of the elderly attending the geriatric OPD services of AIMS, Kochi. Economic security is well documented as one of the protective factors against the late life depression. Current study subjects from both experimental and control group had a good number of severe depression cases. Subjects verbalized their feelings during interviews about their lack of income and how difficult it is to ask for any personal expenses to old age home authorities (not that they will not give) like buying some favourite food items or for better medical care other than what is provided from the old age home or the local government hospitals. Participants from both gender expressed this as a real helpless and worthless situation. Those subjects who had money with them felt better than others in a lot of matters. There should be action from the government to strengthen the economic security of the elderly by extending the coverage of National Old Age Pension Scheme (Mathew and Pate 2005). Efforts are there in this matter.

Marital Status

The 153 samples were staying alone in the old age homes. Out of them 51 (33.3%) were single and they never married. 9 (5.9%) were divorced, 63 (41.17%) were widowed and 16 (10.5%) were separated. 14 (9.2%) subjects who were having partners were not able to live with the spouse because either of the spouse was placed in the old age home forcefully by the children and though they wanted to live with the partner they could not do so. 78 (51%) subjects had no children.
Ravindran (2012) also had reported a similar picture about marital status of elderly old age home resident from Kollam district, Kerala. 33 (55.00%) were widows, 11 (18.33%) were single, 14 (23.3%) were separated and 2 (3.33%) were divorced. While living with a spouse has proved beneficial for the elderly, a large number of them are single. Older men are more likely to be married than older women. For Asian countries 78% older men are married where as it is only 44% for females. Most older persons living without a spouse are widowed. Aged women are the victims of early widowhood and low levels of economic support. Women are more likely to outlive their spouses because they have lower death rates than men at any age and on an average, are younger than their husbands. (Chakraborti 2004). Mathew and Patel (2005) had stated that older couple being separated to live with different children is identified as a significant problem.

**Number of Children, Their Employment Status and Nature of Admission to the Old Age Home**

Current study results show that 51% of the subjects had no children.

Nalini (2006) had reported that 66.74% of subjects from a study of old age home inmates from Mangalore were not having children and 78.32% of the subject’s children were working in another state). But current study results show that 89.33% of children were working in Kerala. But during the interview most of the elderly revealed that their children are also not having good job with sufficient income even to look after their families. When the elderly was having multiple ailments warranting a lot of money for medications the matters became worse for the elderly and their children. 2.67% of the children were unemployed in the current study.
Childlessness and migration of the youth to other states or countries are often identified as reasons for old age home placement of the elderly.

Regarding the nature of admission to old age home 66 (43.1%) subjects of the present study had voluntary admission to old age homes. 74 (48.4%) subjects were placed in the old age home by relatives or others and 13 (8.5%) subjects were forced by children to move to the old age home. Nalini (2006) had reported that majority of subjects 87.21%) were voluntarily admitted to the old age home and 12.79% of the subjects were admitted by others against their will and wish. This kind of a situation can cause low morale and depression among the elderly.

The position and status of the elderly in families is lost due to several reasons in our contemporary society. Urbanisation, migration, breakup of the joint family system, growing individualism and role change of females in families from full time carers etc has contributed to this state. As Vatuk (1990) Observed elderly suffer from ‘dependency anxiety ‘and fear of being abandoned and neglected.

Abuse neglect and lack of love from the part of their children are often causes of late life mental disorders. The system of family care and support for older persons was less reliable than already claimed. Care was often conditional upon the child’s expectation of inheriting the property of the elderly. These conditions can doubtlessly lead the elderly to suffer from fear about the future and dependency anxiety (Mathew and Patel 2005). Probably these reasons forced the elderly to leave their homes and relocate themselves to old age homes.43.1% of the elderly in the present study took voluntary admission to old age home and during interview most of them shared these reasons.
**Duration of stay in the old age home**

About the subject’s duration of stay in old age homes, 45.8% (70) were staying in the old age home for more than four years. 23.5% (36) of elderly were staying in the old age home for less than a year.

Nalini (2006) also had reported 29.30% of elderly living in old age home for more than four years. Only 10.96% of the elderly had their duration of old age home stay as less than one year. These observations show the need for having support and meaningful care and living arrangement needed for such elderly who are abandoned by their family for various reasons. Elders living in old age homes showed lower life satisfaction than those living in their family homes (Mathew, 1997). But still family is the primary source for care and support for the vast majority in India.

**Chronic Diseases, Ability to perform Activities of daily Living, and History of Illness.**

The frequency of chronic diseases among the subjects were 123 (80.4%) and 19.6 % (30) of subjects were not suffering from any chronic diseases. Tiwari et al. (2012) had reported that a majority of the inhabitants in old age homes were having multiple mortality (male = 60% and female = 68% and females outnumbering the males.

Regarding the activities of daily living of the old age home inmates current study showed that 79.1% (121) of subjects were independent, 17% (26) of elderly were partially dependent on others and 3.9 % (6) were using assistive devices in the old age home. Nalini (2006) had reported that 62.51% were independent, 18.28% were using assistive devices and 15.82% were partially dependent.
Present study results show that only 3.92% of the subjects had no health problems. 96.08% of elderly were suffering from various diseases of which 69.94% were having multiple (two or more) health problems. Control group reported more health problems (77.42%) compared to the experimental group (64.84%). Control group also had more conditions associated with pain symptoms (45.16%) whereas experimental group had (28%). This could be attributed to the fact that majority of the experimental group had access to the services of a doctor every day and that old age home was attached to a hospital with 200 beds which is rendering the medical care of inmates. There is also a geriatric ward with 15 beds for the terminally ill with 24 hours service from nurses. Control group subjects also had access to medical care and 24 hours services of nurses. But they had services of the medical clinic once in a week.

Problems related to vision and hearing was also more among the control group subjects. (37.00%) compared to the experimental group (33.00%). Hypertension was the major health problem among the study subjects (47.71%) followed by reduced vision (24.20%), arthritis (24.19%), Diabetes Mellitus (21.57%), Pain symptoms (20.97%), asthma (17.65%) and other medical conditions (15.67%). Already diagnosed cases of depression who were under psychiatric treatment were (3.23%) in the control group and (4.40%) in the experimental group. 10.46% was the total reported for the whole study subjects. All subjects were receiving treatment for the reported medical conditions. (This data is based on the medical reports of the elderly which was confirmed by the Nurses.)

Mental illnesses among the elderly are often associated with physical illness disability and handicap. Indeed physical illnesses and handicap are the risks for

Lundman et al. (2012) reported the association with multiple disease conditions resulting in low inner strength of the elderly which lead them to depression. Nani (2014) has reported chronic pain disorders as a reason for depression. But Tanner et al. (2014) had reported that the number of chronic disease conditions and the number of medications taken per day had no significant relationship with depression in their study subjects, who were community living elderly. The functional limitations resulting from these conditions are directly related to depression. This finding is also supported by Barry et al. (2011). Current study results also showed that physical dependency on others for Activities of Daily Living is significantly associated with severe depression and low morale.

Visitors

Only 3.92% of current study subjects had regular visitors. 32.03% had visitors rarely and 64.05 of subjects reported that they had no visitors. Nani (2014) had reported 62.5% of her study subjects (community dwelling elderly) reported loneliness and it is the third leading cause of depression in her study; first and second causes being financial problems and chronic pain respectively. Tanner et al. (2014) got loneliness as a significant independent predictor of depression (p<0.001) in their study among community dwelling elders. Family support was another
independent predictor of depression (p<0.001). Current study could not get any significant association with the selected variables related to number of visitors.

The findings related to baseline variables are further discussed in this chapter along with associations of psychological study variables.

**Discussion on Psychological variables**

The psychological variables tested in the present study are morale, depression and subjective well-being.

**Effect of Laughter yoga on Morale**

Results show that majority of the elderly residents in old age homes are low in their morale. Only 12.9% of the control group subjects and 18.70% of the experimental group had high morale. 6.5% of the control and 16.55% of the experimental group had mid morale scores. As Fig (1) shows majority of the control group subjects had low morale from pre test through the post tests. 64.8% of experimental group subjects were on low score on morale at the pre test level and it became 28.6% at the end of 8 weeks of laughter yoga. The experimental and control group were not similar at the pre test level on morale. 80.6% of the control group subjects reported low morale whereas 64.80% of the experimental group only had low morale (z = -1.963, p= 0.050).

During the course of the study though there were slight fluctuations in scores the control group subjects remained low in their morale scores, as shown by the Friedman test ($\chi^2=3.520, \text{ df}=4, p=0.475)$ whereas the experimental group showed a significant improvement in morale ($\chi^2= 30.218, \text{ df}=4, p=0.0001$). The two groups were different throughout the study as shown by Mann-Whitney test (z=4.195,
p=0.0001 (2nd wk), z=-1.963, p=0.050 (4th wk), z=-3.358, p=0.001 (6th wk) 
z=-5.068, p=0.0001 (8th wk). Around the 4th week the control and experimental 
group had an increase in minor ailments due to the weather change which has 
affected their state of general health and there by their motivation to continue the 
laughter yoga exercises. Comparatively the study participants were better than other 
inmates of the old age homes. Two participants dropped out due to viral fever. The 
results pattern shows change in morale as well as the score fluctuations denoting the 
fact that various conditions can influence the morale of the elderly and a technique 
like laughter yoga can have a buffering effect for the same. The researcher has not 
come across any reported studies on laughter yoga and elderly’s morale. For the 
present study, data were not analysed on the subscales on PGCMS due to small 
sample size.

Woo et al. (2005) have reported depression as the predominant factor 
contributing to morale as measured by the Philadelphia Geriatric Centre Morale 
Scale among elderly Chinese aged 70 years and above living in community. They 
have identified male gender, old age (above 90 years), being married, good health 
condition, good social support, good hearing, vision and ability to chew, enough 
money for expenses, absence of weight loss, absence of disturbing symptoms, pain, 
insomnia and falls as factors related to good score on morale. Majority of our old 
age home inmates of the current study were lacking in all these factors and it 
actually explains their low morale scores. PGCMS scores were strongly correlated 
with GDS Scores too - (spear man’s correlation coefficient being - 0.77 (P< 0.001, 
n=752) current study subjects also had significantly high GDS scores at pre test. 
Matsudaira et al. (2010) studied the factors related to the subjective well-being of
elderly residents of special nursing homes using PGCMS. The mean PGCMS score was 16.06 to 3.95 points. Multiple regression analysis has shown that security, human relations being good, an acceptable physical state of health and a degree of freedom in everyday life were found to underlay a subjective feeling of happiness (morale) among people living in old age homes. Though these factors as such were not analysed in the present study, items in WHO-5 well-being index and GDS has indirectly measured these areas and those results throw light to the reason for low morale in our subjects.

Loke et al. (2011) have examined the relationship between morale measured by PGCMS and disability, social support, religiosity and personality traits. Greater disability from chronic illness was associated with low morale. Poor /reduced social support was related to poor attitude towards aging and lonely dissatisfaction. Increased religiosity had relatively improved one’s attitude towards aging and life satisfaction, improving the morale but made no difference to the anxiety. Positive personality traits were associated with a modest but consistent improvement in morale. The study identified social support and disability as the modifiable risk factors to improve morale.

Findings of the present study are in the line of these findings since subjects with low morale has high score on GDS and HRS scale and poor score on WHO – well being index.

In experimental group a reduction in depression scores showed an improvement in morale and well-being scores too. On the contrary over the time period control group subjects showed increase in depression scores with reduction in well-being and morale scores. Value based laughter yoga techniques and laughter
meditation and prayer for world peace etc and group approach itself may be helpful in improving the spiritual strength and social support of the elderly, when practised almost 6 days a week in a group setting.

**Effect of laughter yoga on depression**

For the present study depression was measured by GDS which is a subjective report scale and by HRSD which is researcher rated. Hamilton Ratings Scale is specifically useful in assessing the value of an intervention in reducing depression. Control group subjects showed an increase in the level of depression where as experimental group showed an improvement in depression. The experimental and control group were different at pre test level on Hamilton Rating Scale \( z=-2.600, p=0.009 \), and on Geriatric Depression Scale \( z=-2.600, p=0.009 \). According to GDS scores 48.40% of the control group had severe depression while HRS score showed 40.30% were suffering from severe depression. For the experimental group pre test scores showed that 30.80% were suffering from severe depression and according to HRS score it was 24.20%. Continuous practice of laughter yoga for two months has resulted in considerable reduction in depression scores in the experimental group. The improvement was more or less gradual. But results showed an immediate effect of laughter Yoga after two weeks of practice which has resulted in change of GDS scores to normal for 48.40% of experimental group compared to 33% at the pre test level (a difference of 15.40%). according to HRS the percentage of normal people increased from 28.605 to 35.20% (difference of 6.60%). The same effect was not observed by the fourth week. Though the percentage of people who reported normal scores remained higher than the pre-test level it was 12.10% less than the second week first post test measurement. But number of subjects with
severe depression continued to reduce gradually. For the second post test assessment of fourth week majority were found to be in the mild depression group.

While looking at the HRS scores the improvement was gradual. There was a difference of 1.10% between second and fourth week observations. The findings can be explained the same way it was explained for the morale scores. During the fourth week the group of male participants were not found as active as they were for the first two to three weeks. A kind of loss of motivation seen mainly among the male subjects were identified and dealt with gentle and polite requests to continue the therapy. Some of the male participants wanted changes in the exercise steps since they started feeling boredom (as reported by them). Newer techniques were introduced at this point. This gave the researcher valuable insights into the problems of motivating the elderly clients to comply with any programmes for them. Staff members of the old age home also shared similar experience with the elderly. This shows the delicate nature of the elderly and how the changes in their physical health status can quickly disturb their sense of wellbeing and alter their mood. But those who were whole heartedly participating in the programme continued with the same spirit and they were found to be unaffected by the seasonal viral fever. Once the group got recovered from this illness there was steady improvement in scores and by eighth week 53.80% became normal. 2.20% of subjects rated themselves in severe depression score whereas HRS scores showed none of them in severe depression group. 6% of the subjects were in moderately depressed group. These differences could be due to the differences in measurement scales and also may be due to the Hawthorne effect possibility, since the participants were aware that they are
participating in a research study and Laughter yoga will help in improving their sadness. Double blinding was not possible in this study.

Results of the control group also reflect this variation in reporting depression by the subjects and the scores that was rated by the researcher. At pre test 48.40% of control group subjects rated themselves as severely depressed whereas only 40.30% were found to be severely depressed using HRS. 16.10% were found normal by GDS scores whereas 14.50% were found normal by HRS scores. By the 8th week 61.30% of subjects were found to be severely depressed on GDS but HRS scores showed that only 50% of the subjects were severely depressed and 16.10% were found normal compared to 14.50% at the pre test level. The results from both GDS and HRS shows that control group remained depressed throughout the study period. The increase in more number of severe depressions observed towards the second half of the study could be explained in terms of increased sharing of their problems by the elderly about their true feelings due to increased rapport established. As a limitation of self report techniques there is always a possibility that these results could be reflecting over rating of symptoms by some of the subjects also need to be remembered.

The most interesting finding is that only very few subjects among the control group and the experimental group in this study had clinical diagnosis of depression and was on psychiatric treatment with anti depressants. Others were probably never screened for depression even though they are receiving treatment for multiple somatic ailments. This could also be due to the stigma attached to diagnosis of depression. The elderly attribute their suffering to physical problems than to emotional disturbances. This is also reported by Sutin et al. (2013).
As reported by Tanner (2013) et al. There is a discrepancy in the literature regarding rates of depressive symptoms in the older population. While many studies report that depressive symptoms occur in 15% of older adults, (Pratt and Brody (2008), Meeks et al. (2011), US department of Health and Human Services (2010)- in Tanner (2013)) others reported symptoms ranging between 20% and 37%. But these studies are from among the community living elderly among western population. This is due to the fact that among those aged 65 and above who suffer from clinical depression are often undiagnosed and untreated (Cepoice et al. (2007). A diagnosis of depression is more likely to be overlooked in persons who have multiple chronic diseases (Uncetzer et al. (2010). Although not a normal part of aging, depression is often either associated with aging or is lost in the treatment plan associated with Multiple Chronic illnesses. (CDC 2010, as reported by Tanner et al. (2014). Conditions that are more susceptible with advanced age like Alzheimer’s disease, thyroid disease, and diabetes mellitus can be the causative triggers for depression (CDC). 80% of older adults have at least one chronic illness and 50% have more than one chronic illness, placing this population at high risk for depression and untreated depression (CDC 2010, in Tanner et al. 2014).

Tanner et al. (2014) has reported 35.9% of elderly having greater than 5 score on GDS (SF). But this population was home staying. Severity of depression using HRS was high in three studies by Brodaty et al. (1997, 2005 and 1991) as reported by Hegeman et al. (2014) in a meta analytic study on depression. Nani (2014) has reported 61.9% of severe depression, 25% of mild depression and 13.1% of no depression in her study of 160 subjects who are home living from Dhemaji district Assam. She has also reported the findings from Devi Elsa Sanatombi et al.
(2007) study on 100 samples from Udhyava village of Uduppi District, Karnataka using GDS. They got 19% of cases having severe depression, 58% having moderate depression and 23% having mild depression.

Tiwari et al. (2012) in their study among old age home inmates from Lucknow city using Survey Psychiatric Assessment Schedule (SPAS) have reported 37.7% of cases of depression and this was the most common mental health problem.

Nalini (2006) in her study among old age home residents in Mangalore using HRS has reported 56% of mild depression, 36% of moderate depression and 8% of cases having severe depression. 16% of subjects were found not depressed. She has calculated the prevalence of depression out of 430 old age home residents using GDS. Total prevalence rate was 64.65% and 35% of the subjects had severe depression and 47% of the subjects had moderate level of depression. This is higher than the prevalence rates reported by earlier epidemiological studies in India (Nandi et.al (1975)) 33.3% - but this study is criticized for its unrepresentativeness of samples from the geriatric sub group and hence could not offer conclusive information about the prevalence of psychiatric disorders in the elderly. Nandi et.al (1997) has reported 34.9% of prevalence of depression among the Geriatric population.

Combining the experimental and control group subjects of current study, on GDS 38.80% of total sample had severe depression which is near the prevalence reported by Nalini using the same scale among the elderly living in old age homes (35%). According to her study the total prevalence rate was 64.65%. All these findings shows a gradual increase in the number of elderly suffering from depression
irrespective of their place of stay i.e. whether living with own family or living in an old age home.

Compared to other studies the current study was for a longer duration 8 weeks and the laughter yoga was administered for 6 days a week for duration of 30 minutes. The experimental group had 48 sessions of therapy for 1440 minutes. On HRS, (which is effective in measuring the outcome of a therapy for depression) the current study showed significant improvement in the level of depression. Number of elderly who became normal (without depression) increased to 53.80% from 28.60% at the pre test level. 25.30% were mildly depressed and 6% was moderately depressed and there was nobody severely depressed.

Using GDS Scale the percentage of normal individuals increased from 33% to 53.80% and severely depressed reduced from 30.80% to 2.20%. There could be a question whether this result is purely due to the laughter yoga technique alone or is it due to continuous human interaction. Though our pilot study results showed such a possibility, the major study findings are not supporting this. The control group was not visited all 6 days a week, also need consideration. They had interview sessions and physiological measurements for 5-10 days period for a duration of 35 to 40 minutes only. Within those contact times they were increasingly opening up with their problems. Regarding cases who had severe depression with suicidal ideation the matter was reported to old age home authorities for their vigilance and medical management on ethical consideration. Old age home people became alert about such clients and those who were not eating properly, having neglect of personal hygiene and not sleeping were under special observation of the authorities after this reporting. However the problem of stigma prevented them from immediately and
directly seeking psychiatric help even in situations when it was readily available. They preferred spiritual counselling and prayer and support for such cases than consulting a psychiatrist. This shows the need for alerting everybody about Geriatric depression as a treatable entity which otherwise will result in marked reduction in quality of life of the elderly and increased rate of suicide. Spiritual approach also can be continued to have a speedy recovery along with the use of medications whenever it is needed.

Laughter Yoga as a technique is fostering this human interaction which is much needed specially for the elderly abandoned by their relatives and staying away from their near and dear due to various other reasons. The therapist interaction can be minimised or removed by using a video of the laughter yoga sessions like people practising aerobic exercises with a video. But the very philosophy and methodology of Laughter Yoga movement is against this mechanisation of the therapy. Barring such methodological issues laughter yoga can be considered as an effective group psychotherapeutic approach in its results to reduce severity of depression. The current study results are an evidence for the same.

However the possibility of boredom and disinterest creeping in should be closely observed and tackled timely since the few who views it as boring can also influence other participants negatively. Some elderly even had a feeling that if they laugh too much later on they have to cry a lot-a common myth which is prevalent in society. These things are a part of the group dynamics in a setting where people from different back grounds and different personalities live together. This again points to the need for having a variety of techniques to simulate laughter. Hence the practitioners of laughter yoga need to be innovative in devising newer therapeutic
techniques that are suitable for the elderly subjects. This problem is so far not reported by any researchers, may be due to the short duration of therapy in other studies, where sessions were administered only once or twice a week.

The one and only research article which is published regarding laughter yoga for the elderly is that of Shahidi et al. (2010). The depressed elderly women were randomly allotted to laughter yoga group, exercise group and a control. The subjects were not from old age homes. Laughter Yoga was performed for 10 sessions with 30 minutes duration and a post test was done. Using ANCOVA three groups were compared. Decrease in depression scores were found for both laughter yoga group and exercise group when compared to the control group. The authors conclude the value of laughter yoga as a method equivalent to a group exercise in reducing depression.

Srpanyan et al. (2013) had compared elderly living in retirement homes and the community who are above the age of 65 years. Their results showed that symptoms of depression were comparatively lesser in retirement home residents than the community living elderly.

Ko and Young (2011) in their study on effects of laughter therapy on depression, cognition and sleep among the community-dwelling elderly have reported similar results like that of the current study, regarding depression, using GDS. Pre-test mean scores of laughter therapy group on depression was 7.98 + 3.58 which became 6.94 + 3.19 showing improvement in depression. The control group had 8.03 + 3.96 as pre test score which remained more or less the same 8.43 + 3.44. This study was for duration of one month only. Similar finding is obtained in the present study. The pre test Man-Whitney mean rank on GDS was 2.80 for the
control group and after 4 weeks (one month) it was 2.96. Whereas for the experimental group pre test mean rank was 3.57 and after one month it became 3.10. The limitation of the study like small sample size, all subjects from low socio economic group, advanced age, subject dwelling in the same community are identified by the researchers. The generalizability of results is therefore limited. But laughter therapy is a low cost easily performed intervention which can be done in almost any place or time. So these researchers have recommended studies with higher frequency of laughter, long term therapy and larger samples.

As observed by Mathew and Manickaraj (2012) there are studies on depression among the elderly from the western world and other countries. Though it is a growing problem there are very few studies from India. It is not studied much among the old age home inmates. The old age homes are mushrooming but the elderly really do not seem to get the much needed psychological care and support. Even the physical and social environment of old age homes may not be conducive to a pleasant and peaceful stay for the elderly. Due to the cultural differences the perceptions we have about geriatric depression in the west may not be the same for our country. These authors’ training programme to reduce depression, and relaxation training was effective for reducing depression. Winningham and Pike (2007) also has reported that interventions which will enhance the institutionalized elderly’s social support and decreasing their loneliness can reduce depression. This can be observed in the case of laughter yoga were all techniques are to promote deep relaxation and to decrease loneliness. Playfulness and childlikeness are encouraged a lot to create an environment of relaxation and joy. If the elderly can relax, the depression resulting from the physical reasons can be controlled. The physical
reason for depression could be explained as an over action of endocrine hormone from hypothalamic - pituitary - adrenal axis (HPA) deficiency of neurotransmitters in synapses; circadian rhythm which is disturbed in depression can be regulated by exercise that promotes relaxation. Raveendran (2012), has reported reduction in stress level among the institutionalized elderly using laughter therapy. She gives statistical evidence to show that laughter therapy is a better technique than humour. Mean post test score of stress (69.53) was lower than the mean pre test scores (97.33) at 0.05 level significance. The mean decrease in stress score for humor therapy group was 27.8 where as it was 32.06 for laughter group at 0.05 level of significance. This is an evidence for feasibility of laughter as a therapy among the elderly clients residing in old age homes. She has reported stress as a major problem of elderly residing in old age homes. It is interesting to note that the same author could not get any association between stress and selected demographic variables like age, gender, marital status, education, occupation, source of income, visitors, activities’ in old age home and reason for being in old age home. But this appears to be due to the small sample size that researcher had. But it alerts the health care system to look for the disturbances of the elderly beyond these points.

Nalini (2006) has also reported the effect of Horticulture therapy in reducing depression among the institutionalized elderly. Again this involves cost and other technicalities. Whereas laughter does not require any such thing.

Effect of laughter yoga on subjective well-being

When we think about adding life to the years of elderly instead of just adding years subjective well-being emerges as an important area in the quality of life of the elderly. There are not many studies on subjective well-being of the institutionalized
elderly residing in old age homes. Different factors might influence the general well-being in the elderly population - the presence of psychiatric disorders, factors related to age, gender, educational level, living conditions etc. (Heun, Burkart, Maier, & Bech (1999)). They have also observed a significant influence of living conditions on subjective well-being independent of the presence or absence of psychiatric disorder. Corrigan and Buican (1995) reported that depression and social support were independently associated with subjective quality of life. But this study was done among mentally ill patients.

Present study subjects showed no difference in subjective well being prior to the intervention. But laughter yoga intervention group had significant improvement in their subjective well being. This is well connected to their decrease in depression and improvement in morale. So the elderly participating in laughter yoga group must have experienced more of social connectedness with the group. The psychoneuroimmunological changes that are produced due to laughter and the relaxation they obtained must have definitely influenced their well being. Though depression is a major problem among the elderly it is not at all detected and diagnosed at the right time so that treatment can be given for this condition. This kind of a small instrument can effectively pick up subjects prone to depression within no time and depression is a treatable disorder that can really make a difference to the life of the elderly living in the old age homes as well as community. Laughter Yoga emerges as an intervention that can support the treatment with medications and also as a preventive measure.
Discussion on Physiological Variables

As shown in tables 5.1 - 5.12 the experimental group and control group were similar regarding the physiological variables of respiratory rate, resting heart rate, blood pressure, Oxygen saturation, skin temperature and ECG. But after the intervention there was a visible improvement in the general cardiovascular and respiratory status of the experimental group. These parameters showed stability and normalisation in the case of experimental group subjects.

The effect of positive emotions like laughter on human physiology specially cardiovascular and respiratory functions were well studied by the researchers Fry and Lee Berk. Fry and Stofit (1971), Fry and Savin (1988), Berk, Tan & Fry et al. (1989) show the effect of mirthful laughter. Though these researchers used humour as the intervention to create laughter the effects are more important. Everybody may not have a good sense of humour and we cannot all the time depend on comedies or jokes to create laughter. Such a situation warrants the importance of simulated techniques of laughter without depending on jokes or comic events to produce laughter. Simulated laughter eventually turns out to be true laughter during the sessions of laughter yoga. Those researchers have identified that mirthful laughter as existing in nature consists of an infinite number of mixed patterns of expiration, inspiration and interval pause, each one different in duration, sequence and intensity. They have also identified a significant effect of laughter on blood pressure. While laughing there will be a rise in intra arterial pressure. This initial rise subsequently fluctuates at more modest elevation in gross coordination with intensity fluctuations of continuing laughter. Cessation of laughter is followed by brief decrease of pressure to varying levels slightly below the pre laughter baseline.
Laughter yoga exercises were showing the effect of gradual improvement in physiological variables in the experimental group subjects in the present study. As shown in table 5.1 there was no difference in the experimental and control group regarding Respiratory Rate during the pre test ($z = -1.123, p = 0.259$). After the regular practice of laughter yoga there shows an increase in average rank for the experimental group compared to the control group during the 8th week measurement of respiratory rate. ($z = -2.111, p = 0.035$). This shows an effect of time and need for regular practice to get beneficial effects. This is further supported by the finding of within group changes in Respiratory rate for the Experimental group ($\chi^2 = 10.063, df=4, p =0.039$). The control group did not show significant within the group changes in respiratory rate ($\chi^2=9.041, df=4, p =.060$).

Table 5.3 shows no significant difference at pre test level between control group and experimental group in heart rate. There was a significant change at the end of 2 weeks of measurement. ($z = -2.809, p = 0.005$). This could be the result of an excitement in participation in a new and funny exercise programme with increased enthusiasm for the initial two weeks. The results show more number of subjects having normal heart rate that shows a stable cardiovascular functioning compared to the control. However there was no statistically significant difference between the control and experimental group regarding the resting heart rate subsequently, as seen from the table.

As shown in table 5.10 the control group and experimental group were not statistically different during pre test regarding the variable blood pressure. ($z = -0.909, p = 0.364$) though there was a difference in mean rank (72.34 for the control group and 67.56 for the experimental group). Between pre test and first post test, after
2 weeks the experimental group had improved with more individuals having stable BP or reduction in hypertension (mean rank 77.62). Second week BP measurements also were not statistically significant (z = - 1.306, p = .191) (mean rank for the control group reduced to 70.18). The improvement in Blood pressure shown by the experimental group was sustained during 4th week, 6th week and 8th week. The values showed that those elderly having normal BP sustained it, those with pre hypertension and hypertension has improved to normal BP and some from hypotension has improved to normal BP. For the control group the condition was observed to be changing from pre test to post tests (mean ranks 66.48, 64.60, 59.72 respectively). The difference between experimental group and control group were statistically significant (z = - 2.156, p=.031 (4th week), z = -2.451, p = .014 for the 6th week z = - 3.197, p = .001 for the 8th week) These results were similar when compared to the changes that were happening in the psychological variables of morale, depression and subjective well-being for the control and experimental group. This shows a link between physical health status and depression, morale and subjective well-being among the elderly. Ill health affects the mind and also it could be stress from various factors leading to depression, low morale and poor subjective well-being ultimately leading to poor physical health and changes in blood pressure levels. This mind body connectedness and link between physiology and psychology are supported by these findings. The blood pressure reducing effect of physical activity is applicable to elderly patients also (Handman and Stansel (2003). Thus laughter yoga can be considered as a good form of exercise for the elderly who are not capable of and, most of the time unwilling to do physical exercise. The present study subjects also were not doing any physical activity regularly.
Emerging evidence also suggests the effectiveness of physical activity in alleviating symptoms of depression in older adults. Physical inactivity is considered as a risk factor for depression in the elderly and physical activity is as effective as anti depressants in reducing depression among the elderly. (National Heart Foundation of Australia, 2005.) The present study results are supported by these reports.

Nagendra et al. (2007) got similar results in healthy adults after 18 days practice of laughter yoga in the case of blood pressure, and the same study showed a trend in reduced resting heart rate among the participants compared to control. Shibata and Levine (2012) has reported a substantial reduction in left ventricular after load after exercise training in the previously sedentary elderly people who were healthy. The subjects were given one year progressive exercise training. This reduction in after load after exercise training appeared to be attributable to cardiovascular functional modulation to an increase in stroke volume. This aspect could be studied in elderly patients undergoing laughter therapy. Rondon et al. (2002) has also got a significant reduction in blood pressure, cardiac output, stroke volume, and left ventricular end-diastolic volume after the exercise in elderly people. So this will help to reduce the cardiac workload among the elderly clients.

Cepon, Krebs and Herodez (2012) also reported a normalization of blood pressure in their experimental group subjects of elderly old age home residents after the practice of laughter yoga. For this group, pulse rate was roughly same and amount of Oxygen in the blood was higher. But the number of participants were very few. The measurement was with Omron measurement devices. For the present study as shown in Tables 5.7 and 5.8, there was no statistically significant difference
in Oxygen saturation between the experimental group and control group. This could be due to the fact that subjects who were more or less normal in respiratory status and general health condition only were participating in the study. But it was noticed that those subjects having respiratory conditions like asthma and silicosis were showing improved oxygen saturation due to continued practice of laughter yoga. Most of the subjects had a saturation rate above 95.

As shown in table 5.5 at the end of 8th week the experimental group had experienced reduced body temperature after laughter yoga. No similar studies are available to compare this finding. It could be due to the effect of vasodilatation and subsequent cooling of the body, which shows the effect of laughter yoga as an exercise programme.

There was no difference between the two groups regarding ECG (Tables 5.11-12). These results show the safety of laughter yoga exercise for the elderly clients. It has not resulted in elevated heart rate, respiratory rate, ECG changes, hypertension, or hypo tension that can affect the elderly’s homeostasis very badly. The results support the laughter yoga as a safe exercise programme that can be performed while seated. The clients did not resist these exercises since it was not felt as a usual physical exercise but as a pleasurable and joyful group activity. Unlike other exercise activities this is with no cost and it can be done at any part of the day.

**Association between selected psychological variables with the baseline (socio demographic) variables**

The socio demographic factors that are having any sort of association with morale, depression and well-being were examined in the present study against the findings from other reported researches.
Discussion on age

Present study is not showing any association between age and morale (table 4.1). But as age advances proportion of persons in severe depression group increases. More than 50 percent of people suffering from severe depression were above the age of 80 years (Table 4.2). So there is significant association between age and depression. Present study is not showing any association between age and subjective well being (table 4.3).

Woo, Ho and Wong (2005) had a different observation about the elderly Chinese individuals who were living in community and not in old age homes. They got a total score of PGCMS higher among 90+ age group. The authors observe that in the oldest old acceptance of the ageing process contributes to a higher morale. Though there is no significant association between age and morale in the present study the data showed a trend which shows a progressive reduction in percentage of people having high morale as age advances. This could be due to illnesses and inability to engage in activities which causes increased loneliness. Low morale goes very well with increase in depression among the elderly. The present study shows that (Table 4.2) as age advances proportion of persons in severe depression group also increases. Though there is no statistically significant association between well-being and age a similar trend to that of depression and morale was seen in the present study showing more percentage of people having poor well-being as age advances. The reasons could be same as those discussed above. Heun, Burkart, Maier and Bech (1999) also could not see any association between age and subjective well-being in the elderly general population. Gopal et al. (2009) had reported no association between age and depression among the old age home
residents from Thiruvananthapuram. This could be due to a small sample size of the study. Maulik and Dasgupta (2012) had reported a high proportion of depressed people in the age group of 70-79 years followed by the 80+ age group. Their samples were rural community living elderly. For the present study maximum number of severely depressed was in 80+ age group followed by 70-79 years old. Narkhede, Likhar and Rana (2012) got a significant association between increased age and depression in institutionalised elderly (p= 0.001) which supports the present study finding.

Gender and psychological variables

As shown in Table 5.1 there was no statically significant association between gender and morale, in the present study. But the trend shows a higher percentage of males having low morale (79.7%) compared to the female (65.2%). Wo, Ho and Wong (2005) had reported female gender as a significant factor for low morale scores.

There was significant association between gender and depression in the present study. As shown in tables 5.2 and 5.3 severe depression was proportionately high among males on both GDS and HRS scales. Gopal et al. (2009) had reported more depression among females. Narkhede and Likhar (2012) also had reported more depression in females residing in old age homes of Gujarat (p=0.006). Nagaraja (2011) has reported many studies regarding psychiatric morbidity mainly depression with an association to female gender.

Sood, Singh & Gargi (2006), Rama Chandran et al. (1981) Rothera et al. (2003) and Tiple et al. (2006) has reported female gender as a predictor for depression. These studies were not on old age home inhabitants except
Rothera (2003). But Tiwari, Pande and Singh (2012) had reported a contradictory finding and they explain it as a surprising finding that male suffers more than females regarding mental health problems of the elderly in old age homes. This finding is contradictory to Tiwari et al. (2010) epidemiological study of prevalence of neuropsychiatric disorders with special reference to cognitive disorder, among rural elderly - Lucknow study. Tiwari (2012) study reveals that majority of inhabitants were suffering from depression and among them 50% were males compared to 28% females.

The present study findings are well supported by this finding. Same study (Tiwari 2012) has reported a high prevalence of the mental health and physical health problems in inhabitants of old age homes in comparison to community living elderly. The reason (according to those researchers) could be significantly more psychological stressors, negligible family support, lack of medical (Physical/mental) care and facilities, restricted environment of old age homes and financial constraints. During the present study the researcher also had same observations about the inmates of old age homes.

In par with the above findings present study showed that there is significant association with gender and well-being ($\chi^2 = 13.879, \text{df} = 1, p = .000$). 78.1% of the males reported poor well-being, whereas only 48.3% of females had reported poor well-being. Matsudaira et al. (2010) have reported the factors related to subjective well-being of elderly residents of special nursing homes. They were security, human relations being good, an acceptable physical state of health, and a degree of freedom in everyday life. Hangan, Innstrand and Moksnes (2013) have reported the effect of nurse-patient interaction facilitating patients’ sense of well-being by improving
their worth, dignity and well-being. Considering the cultural factors in Kerala, men are free and having an upper hand in everything compared to females, in a family setting. When they have to stay in an institutional setting where there are rules and regulations for everything they consider it as a loss of personal freedom. When they have to share a living space with others in a dormitory kind of accommodation there is loss of privacy and even a loss of sense of security when they have to sleep among total strangers. There are restrictions and rules and conflict with the staff or authorities. Female gender accepts these difficulties by and large due to the culturally fostered submissive nature. Moreover a considerable number of females in the sample who were single were living in hostels or convents as maids where they are used to a restricted environment. But for the males who were quite free, a restricted environment in their old age makes it hard. Thus there is a reduction in their self report of subjective well-being.

**Religion and Psychological variables**

As shown in tables 6.3.1 - 6.3.4 present study shows no statistically significant association between religion and morale, depression and subjective well-being. However there are certain trends observed in the data regarding this variable. A higher percentage of Christians having high score on morale; percentage of Christians who are not depressed is higher than that of Hindus and persons with mild, moderate and severe depression are less among Christians. Whereas the scores on subjective well-being showed no difference between any of the religions. The percentage of people with Good well-being was same for Christians and Hindus.

Keyes and Reitizes (2006) in their study on the role of religious identity in the mental health of older working and retired adults have reported that as religious
identity increased, self-esteem increased and depressive symptoms decreased. The authors have identified religious identity as an important part of older adults’ mental health adjustment. An older person who was more active, successful, competent, confident, relaxed, warm, happy, open, interested in others and sociable had a positive religious identity. Depression and self esteem are more of affective feeling of person in contrast to religious identity which is having a cognitive meaning.

All the old age homes randomly selected for the study were run by Christians. So a higher number of Christians were found to be the inmates. Good numbers of Hindus were there in these homes but only very few Muslims were seen. All these homes had regular religious activities, prayers, meetings with the clergy etc. All forms of prayers were according to Christianity and all were encouraged to participate in the same. However all inmates were not found to be participating in such activities whole heartedly. This shows a difference in religious identity. Perhaps Christians derived more of support and net working from such an environment. In spite of fervent religious services available to the inmates majority of them were depressed, having low morale and poor subjective well-being shows the need for other intervention which will help to improve such state of the elderly old age home inmates. Laughter yoga inculcates spiritual values to its practitioners without considering their religion or religious identity. Nobody is forced to do any ritual which is time bound. There was also a universal element when people were asked to pray for world peace at the end of a laughter yoga session. This was found to be appealing to all subjects in spite of their religious identity.
Educational Status and Psychological Variables

Educational status of the elderly old age home inmates were not found to be associated with morale, depression and subjective well-being in the present study (tables 6.4.1 – 6.4.4).

Maulik and Dasgupta (2012) had reported that illiterates were at greater risk of depression. Various Indian studies on psychiatric morbidity among the elderly have identified low level of education and illiteracy as predictors or psychiatric illnesses- (Nagaraj et al. 2011). Ko and Youn (2010) has also reported that majority of their subjects who underwent laughter therapy (and the control group) had no formal education. They were having depression and cognitive impairment. Tiwari et al. 2012) also had reported that 28.9% of the old age home inhabitants were illiterate followed by those with primary level of education (20%). Proportionately larger number of females were illiterate or having less education. Kerala being a state with high literacy rate majority of the sample were literate in the present study.

According to Raveendran (2012) 91.66% of her old age home samples from Kerala had primary education and the remaining had studied up to high school. The present study could not get any association between educational status and the psychological variables may be because of small sample size. Only very few had education above the school level. Almost all subjects in the current study can be explained as low with reference to their educational and socioeconomic background. Members from both control and experimental group had high score on severe depression, low morale and poor subjective well-being.
Marital Status and Psychological Variables

The present study showed no association between morale and marital status. Majority of the study participants were having low morale. But married group had more depression on GDS and HRS showing an association between marital status and depression (likelihood ratio 22.904, df = 8, p< .05 and $\chi^2 = 27.319$, df = 12, p< .05 respectively). There is also an association between well-being and marital status with married people having poor-well being compared to others (likelihood ratio = 10.305, df = 4, p < .05).

This finding is quite interesting since marriage is found to be a protective factor from depression and mental illness normally. These elderly married people were a special group who were forcefully separated from their spouses by children. One spouse was sent to old age home while children took custody of the other spouse. This was found to be due to conflicts between children and parents in matters related to property division. The elderly couple could not stay together in some of the old age home clusters selected because they were giving admission to only males or females. This sort of forced separation when the partner is alive and there are no problems between the couple were explained by, almost every such subject reporting it as extremely sad. Some subjects were prevented from visiting their spouse by children. This was reported as a very sad situation. In some of the cases the elderly reported that the female was permitted to stay back if she was healthy and of any use to the children for managing their homes or for looking after the grandchildren. The sick spouse was sent to old age home since children perceived him/her as a burden due to reasons of poverty or inconvenience to look after since children had to go for work.
Number of Children and nature of placement to old age home-Association with the psychological variables

There were no association between number of children and morale, depression and subjective well-being of the elderly residing in old age homes. Those elderly who were widowed were placed by the relatives or others in old age homes since there were no children to look after them. Such people were actually having poor—well being and depression. This factor could have been evident probably if we had a larger sample size. Similarly those having many children but placed in old age home and having only one child for whom the elderly parent sacrificed much also had problem, which could have been evident with a larger sample. Researcher could not find similar studies for further discussion.

As shown in tables 6. 10.1 to 6. 10.3 nature of old age home admission has association to psychological variables. 100% of elderly who were forcefully placed by their own children in the old age home had low morale, followed by those elderly who are placed by relatives and others (81.1%). Comparatively high morale score was seen in voluntary placements in old age homes (30.3%) though on the whole 54.5% of them also had low morale. (likelihood ratio 24.592, df = 4 p<.000). Same observation is true regarding percentage of cases suffering from severe depression. 76.9% of the severely depressed were forcefully placed by their children and none of such inmates were found without depression. (Likelihood ratio 18.601, df = 6 p< .005). On geriatric depression scale also same association is observed. Highest percentage of normal people (37.9%) were among the voluntary admission category (Likelihood ratio = 17.699, df = 4, p< .001). Regarding well-being also same observation is present. 84.6% of elderly who were placed by their children were
having poor well-being scores (Likelihood ratio 5.401, df=2, p< .067 association found only at 0.1 level of significance for well-being.)

Similar reported studies are not available for comparison of results. It shows the emotional disturbance of the elderly when they are literally thrown out from their own homes this also shows the attachment of the aged to their own surroundings and family and how much is the sense of loss and resultant depression when they are placed in an old age home against their will. It may further help us in understanding the nature of geriatric depression seen among the elderly old age home residents. This again can be seen as a sign of value deterioration in our society.

**Duration of stay in the old age Home and Psychological variables**

There was no statistically significant association between duration of stay in the old age home with psychological variables except morale. But a definite trend is seen in the case of duration of stay and all the three psychological variables. The initial years (less than one year category & 1-2 years) the elderly were found to have more depression, poor well-being and low morale. It is the most disturbed phase. When their duration of stay increases (2-3 years & 3-4 years) probably they are coming to terms with the old age home environment and may be their own life. But when the duration of stay increases (more than 4 years) they go back to a state of poor well-being, low morale and more of hopelessness and worthlessness were found. They even felt that they lost their own identity and is viewed as an inmate of old age home who is having nothing to look forward except death. Some of the inmates were found to be seeking placement in another old age home during this time duration. (That phenomenon was not studied in the present research).
Morale was found to be highest (41.7%) among the inmates with a duration of stay 2-3 years (But their number was small) (likelihood ratio = 167.221, df = 8 p<0.39). People when they are reasonably healthy were given various responsibilities in the day to day activities of the old age home. Comparatively people with duration of 2-3 years of stay who were active had a sense of usefulness derived by their engagement in such responsibilities. This in fact might be the reason for their improved morale. As duration progresses this ability is deteriorating which makes them non productive and dependent on others due to poor physical health. This naturally push them to low morale poor well-being and increased severity of depression.

**Chronic illnesses, physical dependency, number of visitors and association with psychological variables**

The present study could not find any statistically significant association between the psychological variables and the presence of a chronic diseases. This could be due to the fact that people who were selected for the study were on medications for their physical health problems and also there are other factors more depressing than the presence of a chronic disease conditions with which the elderly was living for quite some time and got accepted as part of their life. But Maulik and Dasgupta (2012) have reported more depression among people who had a feeling of illness and more of body ache. This symptom itself can be viewed as a sign of depression rather than body ache or illness feeling leading to increased depression.

There is statistically significant association between physical dependency and morale, depression and well-being as shown by the present study. People who could move with the help of assistive devices had good well-being (83.3%)
compared to those who are dependent on others (38.5%) for their care. There is statistically significant association between physical dependence and depression (likelihood ratio 12.211, df=4, p< 0.016 for GDS scores & likelihood ratio = 17.402, df = 6 and p< .008 on HRS) and physical dependence and morale (likelihood ratio = 16.992, df =4 p< 0.002). Compared to people those who are independent in activities of daily living and those who used assistive devices for locomotion had better condition than that of dependent clients. Dependency is perceived by the elderly negatively and it affects the morale, well-being and depression. Often they felt they are at the mercy of other people and a burden for others.

No significant association is found between number of visitors and the physiological variables. This could be due to the very small number of subjects having regular visitors. Comparatively well-being was better among the elderly who were getting regular visitors. Loneliness and a feeling that they are not wanted by the immediate family members and relatives were expressed as a bitter experience by most of the elderly.

Summary

This chapter discussed the major findings of the study with reference to the hypotheses and objectives. Socio demographic variables, psychological variables, physiological variables and the association between socio demographic variables with psychological variables were discussed.

The next chapter presents the summary of the study with major findings and conclusions, implications of the present study, limitations and suggestions for future studies from the same area.