Correlation Among The Nutritional, Mental And Physiological Factors Affecting The Health And Lifestyle Of Geriatrics Population

Dr Luxita Sharma

Abstract: Introduction: Old age is a span of fast change and the bodily changes are too fast in terms of degeneration. Health at old age is explained by the adverse bodily changes, mental disturbances and nutritional deficiency disorders. Aim: To find the Correlation among the Nutritional, Mental and Physiological factors on health of Old aged subjects using Seligman’s Model PERMA Materials and Methods: In the present study the Geriatrics Population from age group 65-75 years suffering from Cardio-Vascular Disorders and Hypertension were selected by purposive random sampling. In this quasi experimental one group study, the researcher made questionnaire was filled by the subjects. The response “Yes” was given 1 point and 0 point for the “No” to find out correlation by Pearson’s method. Based on this result the PERMA model by Martin Seligman was used to intervene the subjects. All the Four components Positive emotion, Engagement, Relationship-Meaning and Accomplishment were analyzed on Liker scale(1-3) and scores were given from 5 as lowest and 25 as highest. Results: Pearson Correlation was found out between all Psychological disorders, Physical Ailments and Dietary habits. The results of the study were completely based on interview based questionnaire and the responses of the selected subjects pre and post test of the study. While the medical reports specified the type of illness present among the Geriatrics population. The Table of Dietary Intake is also shows the significant high calorie diet which leads to development of diseases. The r value showed that all factors were positive correlated. The positive attitude, Engagement, Relationships and meaning life and Accomplishments parameters difference were significant (P < 0.01) after the application of Seligman’s PERMA model. Conclusion: The PERMA theory by Martin Seligman encourages the focus on not only curing mental illness but also making the lives of such people more productive and fulfilling, and identifying and nurturing talent which old people almost forgot. Dietary Intake changed the Physical ailments as well as Mental health condition of the subjects.

Key Words: Diet, Nutrition, Old Age, Physical ailments, Food intake

Introduction:

The present study will enlighten the linkage of physical, psychological and dietary factors in maintaining health of the individual. According to World Health Organization (WHO) 55 years is the beginning of old age and also WHO says that the old age is the start of losing active life, loss of previous roles, or inability to make active contributions to society. The ageing results from the destruction of cells at molecular levels and then there is slow reduction in the physical and mental capability and then old people become prone to diseases and untimely death. There are two major changes during Old age i.e. Physical and Psychological changes and these are related with dietary intake. The food which we eat has a direct impact on our brain. A good sleep helps our mind to absorb different nutrients and have different effect on the functioning of brain 1 Psychological Changes- The functions of brain are twenty four hours and, to carry out motor and sensory functions, our brain needs glucose as constant supply which is like machines require a constant supply of fuel. The fuel which our brain needs comes from the food we eat. The types of mental issues with old age people are Anxiety, Dementia, Lack of Socializing and they are afraid to go out. These all parameters are taken on the basis of answers of questionnaire made by the researcher. According to the researches, Old age is linked to Anxiety which is a healthy emotion but in old age it is the worst nightmare of old aged people. The second type for anxiety is social phobia which arises when Old people are afraid to go out. Anxiety symptoms are shown by the physical aches and pains while having a disturbed stomach. Dementia is a disorders which involves memory loss and losing ability to take decisions. The old age people are confined to their homes so they suffer from Lack of socializing or troublesome behavior. The phase of old age people have a fall on the mental functions and memory is mostly affected. Health and Nutrition Intake during Old Age - The Health care professionals should also focus on the Nutrition in old age. We tend to eat more of unhealthy food as compared to that of healthy one, which harms our mind and body. Unhealthy foods are those which are processed or refined foods rich in refined sugars or trans fats are harmful for the body as well as brain. More of refined sugar impairs the insulin mechanism and increases the inflammation in the body thus leading to oxidative stress. Healthy food products such as chickpea, quinoa and oats can be added to their food to reduce the oxidative stress. From many studies it has been found that there is a direct relation between a diet rich in refined sugars and impaired brain functions. More of refined sugars can even cause mood swings and severe conditions like depression. In presence of nutrients there are less chances of brain injury. As explained earlier WHO also says that Physical activity is reduced during old age. So Physical health deterioration also reduces mental functioning during old age. Physiological changes that old age has a major shift of working of organs such as muscle mass is decreased and the collagen in the skin is not able to keep it intact. The basal metabolic rate is also reduced and decline results in normal functioning of the body. The metabolic disorders are also seen in the old age such as Heart disease, kidney failures and diabetes mellitus. The reduction in secretion of saliva and gastric juice directly impact the digestion and...
absorption of nutrients.

Further we need an important tool to measure the mental capabilities of people for which the Martin Seligman’s Model is used in the present study.

Seligman’s PERMA model

The PERMA model was designed by Martin Seligman with five core elements of psychological well-being and happiness6,7,8.

Reference :
https://positivepsychologyprogram.com/perma-model/


P – Positive Emotion

The positive emotion brings happiness to one's life and it is the emotion which is not limited to smiling only. This emotion can provide a positive attitude towards past, present, and future.

E – Engagement

To be engaged in life has lot more definitions, whether it means to be busy or to be mentally fully occupied. Engagement in the activities in our lives is significant for us to memorize, live to the fullest and take care of an individual's happiness.

R – Relationships and M – Meaning

Relationships are in personal as well as professional or social lives, but most important role is how to handle them all and create a balance. The satisfaction in relationships gives a mental support and we become strong in difficult times6,7. The M- meaning is understanding the aim, roles and responsibilities in life and also the direction to choose to be more satiating life.

A – Accomplishments

Ambitions in life gives us a goal and aim to survive and grow. When we have enough accomplishments the life gives us a boost to live and burgeon. 6,7,8.

Aims and Objectives

To develop a questionnaire to find out the physical and mental health (Using Seligman PERMA model) of Old Age people suffering from Hyperlipidemia and Hypertension.

To use the seven day (24x7) dietary recall method for dietary interpretation of the results for subjects suffering from Hyperlipidemia and Hypertension

To find the correlation among Physical, Psychological and Dietary factors affecting health of selected subjects (suffering from Hyperlipidemia and Hypertension ) pre and post test.

Materials and Methods

Locale of the study

The study was conducted on Old age subjects of age 60-70 years of age belonging to the city of Gurgaon.

Selection of the subjects

Hundred Old age people were selected randomly from different localities of Gurgaon. The blood parameters/Reports and Blood pressure of the subjects was taken to find whether the subjects were suffering from Cardio Vascular Disorders and Hypertension. Then Out of hundred 61 subjects were selected (After calculation of sample size).

Then the subjects suffering from Cardio Vascular Disorders and Hypertension were selected by purposive random sampling.

The sample size was calculated with the following formula ;

\[ \text{Sample size} = Z_{1-\alpha/2}^2 \times SD^2 \]

\[ = 1.962 \times 202 \]

\[ = 52 \]

The sample size calculated was 61.

Z- = Is standard normal variate as mentioned in previous section

SD = Standard deviation of variable. Value of standard deviation can be taken from previously done study or through pilot study

d= Absolute error or precision

Inclusion Criteria : All the selected 61 subjects were

(i) Suffering from Cardio Vascular Disorders and Hypertension
(ii) Not following any dietary restrictions
(iii) Not following any counseling sessions / clubs
(iv) All the selected subjects belonged to urban area Gurgaon

No control group was taken as the technique of One
group – pre test and post test was followed. There is experiment in which one selected group is under observation with close supervision and monitoring. It has no external validity.

Exclusion Criteria

Exclusion criteria were the subjects who were not suffering from Cardio vascular disorders and Hypertension. The subjects eating healthy diet. The subjects who were not feeling any emotional distress / social alienation. The subjects who failed to give consent were also excluded.

3) The objective and experimental protocol of the study was explained to the subjects, and their prior consent was taken

Paraphernalia

After the subjects were selected ,the collection of data was done by the researcher made dichotomous questionnaire which was based on their psychological health and further consisting of demographic details, medical history and for food habits 24 hour recall method was used.

Components of Questionnaire -The Medical history of the subjects through the questionnaire was found out. The questions framed were as Do you have difficulty in breathing? “YES” response was given point 1 and “NO” was given 0 point.

Demographic details – The general information of the subjects was collected such as Age, Sex, Family size , Income group , Address etc

The criteria for dividing the Sixty one subjects into the different categories of the Physical and Psychological disorders. The subjects who responded “Yes” to the questions such as Do you feel Loneliness? Were given point 1 and the subjects who responded “NO” were given 0 points.

PERMA Model - The Educational Interventions for Psychological disorders. The PERMA Model was used. The different components of PERMA Model were Positive emotion, Engagement, Relationships and Meaning and Accomplishments. The theory-based questionnaire is divided into four sections; Positive Attitude e.g. I am going to be positive about my life and situations plus take healthy diet rich in all food groups, Engagement e.g. I am going to engage myself in activities that gives me pleasure , Relationships and Meaning of life e.g. I will understand the value of human bonding and importance of life and Accomplishments e.g. I will be satisfied and gratified by the things I have got in life. The data was collected by using Liker Scale (1 to 3). Scores were given on the scale of minimum 5 and maximum to 25 numerics.

Dietary Intake - Similary Food intake was surveyed among the subjects. They were given the researcher made questionnaire in which 24 hour recall method was used. The dietary intake of seven days was also noted and calculated by food frequency Questionnaire. Food frequency questionnaire resulted in the calculation of percentage of subjects who were in habit of skipping meals, eating 2/3 times a day or having food cravings.

Result of Pilot Study - All the subjects were made to fill the questionnaire before the interventions were started. The questionnaire which was developed by taking references of similar studies. Then the validity of the questionnaire was investigated by an expert panel of seven experts which included Three nutritionists, two psychologists and two doctors. The questionnaire was given to experts and they were asked to provide their opinions of related , weakly related, related and strongly related. Then according to the recommendations of the panel of the experts questionnaire was modified and finalized. The next step was to calculate the reliability of the questionnaire, a pilot study on 15 subjects was carried out. The Cronbach’s α coefficient of the questionnaire was (0.79) which was at the favorable level. The results of pre-test groups in pilot study showed that the subjects were not eating healthy food and were not psychologically healthy. Then an educational intervention programme PERMA model by Seligman was followed by the subjects6,7. The old age subjects followed the interventions for one month on daily basis. In order to assess the reliability, a pilot study performed on 15 subjects not included in the final sample.

The results of Pilot study were Around 86 percent of the subjects were not serious about their meal timings and food intake. The subjects responded as “Yes” for the ailments and the result were Joint Problems 66%, Respiratory disorders 71%, Loss of appetite 74 % and Digestive Disorders 65% present in selected subjects. The Cronbach’s α coefficient of Positive emotion (0.79); Engagement (0.89) and Relationships and Meaning (0.88) and Accomplishments (0.76) were all at the favorable level. The results of pre-test groups showed that the subjects were suffering from psychological disorders and it was correlated significantly to physical problems and dietary intake. Then an educational intervention programme was designed for the subjects. The old aged subjects followed the interventions for one month daily.

The pearson’s correlation coefficient was applied to find out the correlation between psychological and physical factors and similarly between psychological and dietary factors.

The Nutritional educational intervention was developed based on results of pre tests. The subjects were counseled one to one after understanding the individual needs and problems. Training materials and instruments included audio-visual aids, food pyramid, charts and posters, nutritional education booklets, and pamphlets were also used. The subjects were educated about nutrition and the function of each food group in their body. They were motivated to fill their stomachs with whole cereals, fruits , vegetables rather than junk foods and sad foods such as low calorie snacks etc.
Statistical Analysis: The statistical calculations were carried out using SPSS software version 23.0. The Mean, Standard deviation, T-test and Carl Pearson’s Correlation coefficient were used to analyse the data.

Results and Discussion

The various factors related to Old age are being studied and here the interpretations are given as follows;

Percentage of Medical Illness among the selected Old Aged Subjects

Table no.1 inserted here

This table shows the percentage of the ailments that was prevalent among the geriatrics population at the time of study.

Mean Daily Dietary Intake of selected Geriatrics population

Table no.2 inserted here

This table shows the increased caloric, fats, carbs and protein intake among the subjects which was reduced after the counseling sessions and diet plans given by the researcher to balance their daily diet.

Correlation of Psychological factors with Physical Ailments

Table no.3 Inserted here

Loneliness: The loneliness was found to be positively correlated to Joint problems, Respiratory disorders, Loss of appetite, digestion problems and High lipid levels with the $r_1= 0.0679$, $r_2= 0.044$, $r_3= 0.108$, $r_4= 0.633$ and $r_5= 0.299$ respectively. It was primarily due to painful conditions of joints and breathlessness the old subjects were unable to move and go to their relatives. Due to Loneliness the subjects were not eating properly with a negative feeling for cooking and eating which led to digestive disorders as well. The old people were sad and stressed due to loneliness and hence lipid levels were raised.

Afraid to go out / Socialise: A positive correlation was found between afraid to go out/socialize and Joint problems, Digestion problems and high lipid levels with $r_1= 0.138$, $r_2= 0.428$ and $r_3= 0.307$ respectively. The old subjects were not able to walk and they had a fear of stomach upset so they refrained themselves to go out. While there was negative correlation between Socialisation and respiratory disorders and loss of appetite with $r_1= -0.040$ and $r_2= -0.783$ respectively.

Lack of Decision Making: The lack of decision making was found to be positively correlated to Respiratory disorders, Loss of appetite, digestion problems and High lipid levels with the $r_1= 0.187$, $r_2= 1$, $r_3= 0.0340$, and $r_4= 0.064$ respectively. Due to physical problems the subjects were not able to take decision on day to day life activities e.g. what to eat, go to some events or participate in club activities etc. The correlation was negative with Joint problems $r=-0.122$.

Dementia: According to the results of the data the Dementia/loss of memory was correlated positively with physical ailments as loss of appetite and digestive disorders with $r_1 = 0.043$ and $r_2 = 1$ respectively.

Anxiety: Another psychological disorder Anxiety had positive correlation with Joint problems, Digestive disorders and Lipid levels with $r_1 = 0.052$, $r_2 = 0.899$ and $0.022$ respectively. The subjects reported anxiety due to constant pain in knees and lower back. Further the upset stomach gave them stress of bowel movement. Either they suffered from constipation or diarrhea. The medicines to lower cholesterol were also not friendly and they were anxious due to high lipid levels as well as it can lead to heart attack.

Correlation of Psychological factors with Dietary intake

Table no.4. to be inserted here

Loneliness: A positive correlation was found between Loneliness and Food cravings, Eating 2 times/day and Eating 3 times /day with $r_1 = 0.800$, $r_2 = 0.556$ and $0.249$ respectively. The data showed that loneliness was major factor that affected the food intake of the subjects. There was negative correlation between loneliness and habit of skipping meals with $r=-0.261$.

Afraid to go out / Socialise: The old subjects were non social and there was a positive correlation between afraid to go out and Food cravings, Eating 2 times/day and Eating 3 times /day with $r_1 = 1$, $r_2 = 0.682$ and $0.464$ respectively. While negative correlation was with habit of skipping meals with $r=-0.230$.

Lack of Decision Making: This was the only factor which had positive correlation with habit of skipping meals with $r=-0.088$. It was due to decision was not made for what to eat and they skipped meals. The Food cravings, Eating 2 times/day and Eating 3 times /day had a negative correlation with lack of decision making as shown in Table no.4.

Dementia: According to the results the Dementia/loss of memory was correlated positively with diet habits as food cravings, Eating 2 times/day and Eating 3 times /day with $r_1 = 0.42$, $r_2 = 0.326$ and $r_3= 0.119$ respectively. The food cravings were for nutrient less foods and they did not nourish brain. The subjects needed to eat at least five times a day but they were eating only 2-3 times per day which is not sufficient for brain and other body functions. Skipping meals was not correlated to Dementia with $r=-0.165$.

Anxiety: Anxiety was positively correlated with food cravings, Eating 2 times/day and Eating 3 times /day with $r_1 = 0.521$, $r_2 = 0.166$ and $r_3= 0.166$ respectively. The stress leads to mindless eating and this study has proved. The old aged people were eating voraciously the food which was harmful for their well being due to anxiety. Skipping meals was not correlated to Anxiety with $r=-0.183$.

The results showed how psychology was affecting the subjects in terms of their physical problems and dietary habits.

Effect of PERMA Model before and after the
educational intervention on Old age subjects

Table no. 5 to be inserted here

The PERMA Model is divided into four sections: Positive Attitude, Engagement, Relationships and Meaning of life and Accomplishments. The subjects were counseled based on the theory of PERMA model and the scores were collected based on the liker scale scoring. The subjects in the pre study period scored $10.66 \pm 4.033$ for the Positive attitude and post study it was $15.44 \pm 4.4$ and the T-test showed a significance increase in the positivity in the thinking of subjects. Pre test data showed $9.36 \pm 2.98$ for the factor of engagement in activities in day to day life which was very less and post counseling sessions it increased to $14.07 \pm 4.65$ which was also significant ($P < 0.01$). Then the component of relationships and meaning was studied which was also scored less in the pre study period $11.04 \pm 4.58$. The subjects were made to realize the importance of human touch and meaning worth of life they have got. They were alienated from society which was problem for their food and physical ailments. The score rose up to $15.6 \pm 5.29$. The T-value came up to one which is very significant. The last but not the least was Accomplishments which were also lacking in the old people. The score was $10.06 \pm 4.13$ which was very less and graded around 1. The subjects were counseled and the score increased to $14.02 \pm 3.87$. It was significant increase in the understanding of accomplishments ($P < 0.01$).

Table no.3 inserted here

Limitations of the study

The sample size was not very large as much of review of literature is not available on coorelation of all three parameters researcher has taken.

Conclusion

The present study is focused majorly on the problems that geriatrics population faces in terms of physical ailments, psychological factors and dietary intake. This topic is very less researched and the food intake studies in Geriatrics population are present but their correlation with mental health is missing. The researches talk about mood foods, emotional eating, adolescents mental behavior with food intake but with geriatrics population is often ignored. In the present study, the geriatrics population have showed a positive correlation among the physical ailments, psychological problems and dietary intake. There fore if Physical disorders are present in human body then Diet can cure a person both physically and mentally. Further counseling with PERMA model guidelines can improve the mental health to which Diet and physical ailments are linked.

This study was undertaken when I counseled old patients for their Dietary intake and heard about their grievances about the Loneliness, lack of interest in eating or socializing. All the subjects taken for this study were my patients and further research on this topic is needed to get more better results.

References

[14] Luxita S, Puneeta A. Organoleptic and Physicochemical Properties of Tarts Developed
Table no.1. Percentage of Medical Illness among the selected Old Aged Subjects

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Medical Disorders / Diseases</th>
<th>Percentage (n = 61)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hyperlipidemia</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Hypertension</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>Joint problems</td>
<td>56%</td>
</tr>
<tr>
<td>4</td>
<td>Respiratory disorders</td>
<td>66%</td>
</tr>
<tr>
<td>5</td>
<td>Loss of appetite</td>
<td>73%</td>
</tr>
<tr>
<td>6</td>
<td>Digestive disorders</td>
<td>78%</td>
</tr>
<tr>
<td>7</td>
<td>Loneliness</td>
<td>79%</td>
</tr>
<tr>
<td>8</td>
<td>Lack of Decision making</td>
<td>81%</td>
</tr>
<tr>
<td>9</td>
<td>Afraid to go out or socialize</td>
<td>72%</td>
</tr>
<tr>
<td>10</td>
<td>Dementia i.e losing memory</td>
<td>73%</td>
</tr>
<tr>
<td>11</td>
<td>Anxiety</td>
<td>65%</td>
</tr>
</tbody>
</table>

Table no.2. Mean Daily Dietary Intake of selected Geriatrics population

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Old Aged Subjects</th>
<th>(a)/(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before the study</td>
<td>After the study</td>
</tr>
<tr>
<td>Energy (Kcal)</td>
<td>2076 + 248.6</td>
<td>1776 + 109.8</td>
</tr>
<tr>
<td>Proteins (g)</td>
<td>86.6 + 4.54</td>
<td>64.8 + 5.36</td>
</tr>
<tr>
<td>Fats &amp; oils (g)</td>
<td>60.1 + 5.27</td>
<td>26.7 + 2.4</td>
</tr>
<tr>
<td>Carbohydrates (g)</td>
<td>447.1 + 79.5</td>
<td>338.6 + 39.6</td>
</tr>
<tr>
<td>Dietary fibre (g)</td>
<td>19.8 + 4.10</td>
<td>35.04 + 2.46</td>
</tr>
<tr>
<td>Calcium (g)</td>
<td>578.8 + 168.9</td>
<td>797 + 246.04</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>24.86 + 11.4</td>
<td>18.6 + 3.58</td>
</tr>
<tr>
<td>Beta-Carotene (mcg)</td>
<td>2134.4 + 48.17</td>
<td>2254 + 427.8</td>
</tr>
<tr>
<td>Thiamine (mg)</td>
<td>0.686 + 0.266</td>
<td>0.65 + 0.16</td>
</tr>
<tr>
<td>Riboflavin(mg)</td>
<td>0.82 + 0.321</td>
<td>0.71 + 0.26</td>
</tr>
<tr>
<td>Niacin (mg)</td>
<td>9.44 + 2.77</td>
<td>10 + 2.95</td>
</tr>
<tr>
<td>Ascorbic acid (mg)</td>
<td>31.4 + 6.35</td>
<td>30.54 + 6.05</td>
</tr>
</tbody>
</table>

NS – Non Significant  * Significant value at (P < 0.05)  ** Significant value at (P < 0.01)
### Table no.3. Correlation between Psychological Disorders and Physical Ailments of Old Age subjects

<table>
<thead>
<tr>
<th>S.no</th>
<th>Psychological Disorders</th>
<th>Physical Ailments (Non-Communicable diseases)</th>
<th>NS</th>
<th>*</th>
<th>**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Joint Problems</td>
<td>Respiratory disorders</td>
<td>Loss of Appetite</td>
<td>Digestion problems</td>
</tr>
<tr>
<td>1</td>
<td>Loneliness</td>
<td>0.0679**</td>
<td>0.044*</td>
<td>0.106**</td>
<td>0.633**</td>
</tr>
<tr>
<td>2</td>
<td>Lack of Decision making</td>
<td>0.138**</td>
<td>-0.0400NS</td>
<td>-0.783NS</td>
<td>0.428**</td>
</tr>
<tr>
<td>3</td>
<td>Afraid to go out or socialize</td>
<td>-0.102NS</td>
<td>0.187**</td>
<td>1**</td>
<td>0.0340*</td>
</tr>
<tr>
<td>4</td>
<td>Dementia i.e losing memory</td>
<td>0.122**</td>
<td>-0.007NS</td>
<td>0.043*</td>
<td>1**</td>
</tr>
<tr>
<td>5</td>
<td>Anxiety</td>
<td>0.052*</td>
<td>-0.091NS</td>
<td>-0.005NS</td>
<td>0.899**</td>
</tr>
</tbody>
</table>

NS – Non Significant * Significant value at (P < 0.05) ** Significant value at (P < 0.01)

### Table no.4. Correlation between Psychological Disorders and Dietary habits of Old Age subjects

<table>
<thead>
<tr>
<th>S.no</th>
<th>Psychological Disorders</th>
<th>Dietary Habits</th>
<th>Food cravings</th>
<th>Eating two times a day</th>
<th>Eating three times a day</th>
<th>Skip meals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loneliness</td>
<td></td>
<td>0.8002**</td>
<td>0.556**</td>
<td>0.0249*</td>
<td>-0.0261NS</td>
</tr>
<tr>
<td>2</td>
<td>Lack of Decision making</td>
<td></td>
<td>1**</td>
<td>0.682**</td>
<td>0.464**</td>
<td>-0.230NS</td>
</tr>
<tr>
<td>3</td>
<td>Afraid to go out or socialize</td>
<td></td>
<td>-0.093NS</td>
<td>-0.160NS</td>
<td>-0.14NS</td>
<td>0.088*</td>
</tr>
<tr>
<td>4</td>
<td>Dementia i.e losing memory</td>
<td></td>
<td>0.42**</td>
<td>0.326**</td>
<td>0.119**</td>
<td>-0.165NS</td>
</tr>
<tr>
<td>5</td>
<td>Anxiety</td>
<td></td>
<td>0.521**</td>
<td>0.166**</td>
<td>0.166**</td>
<td>-0.183NS</td>
</tr>
</tbody>
</table>

NS - Non Significant Value * Significant value at (P < 0.05) ** Significant value at (P < 0.01)

### Table no.5 Mean Difference between the Components of PERMA Model pre and post study period in the old age subjects

<table>
<thead>
<tr>
<th>PERMA MODEL Components</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Attitude</td>
<td>10.66 ± 4.033</td>
<td>15.44 ± 4.4</td>
<td>1.236**</td>
<td>0.000</td>
</tr>
<tr>
<td>Engagement</td>
<td>9.36 ± 2.98</td>
<td>15.6 ± 5.29</td>
<td>2.44**</td>
<td>0.000</td>
</tr>
<tr>
<td>Relationships and Meaning of life</td>
<td>11.04 ± 4.58</td>
<td>15.6 ± 5.29</td>
<td>1.00**</td>
<td>0.000</td>
</tr>
<tr>
<td>Accomplishments</td>
<td>10.06 ± 4.13</td>
<td>14.02 ± 3.87</td>
<td>1.18**</td>
<td>0.000</td>
</tr>
</tbody>
</table>

NS - Non Significant Value * Significant value at (P < 0.05) ** Significant value at (P < 0.01)
APPENDICES

Personal food and drink record – 24X7 Dietary recall

ANNEXURE -1

BACKGROUND QUESTIONNAIRE

GENERAL INFORMATION:-

Name: ........................................................................................................
Date: - ........................................................................................................
Address: ....................................................................................................
Telephone:-..................................................................................................
E-mail:-....................................................................................................... 
Sex: - Male □ Male    □
Age..............................................................................................................
Date of Birth............................................................................................... 
Height:-………………... Weight:-…………………………………...kgs
10. BMI:-....................................................................................................
11. Marital Status: - Married    □ Unmarried    □
12. Children’s Age:-..................................................................................
13. Occupation: -
14. Family Type: - Nuclear □ Joint    □
15. Number of family members:-..............................................................
16. Economic Status: - ..............................................................................
   <10,000
   10,000 – 20,000
   20,000 – 30,000
   30,000 – 40,000
   40,000 – 50,000
   >50,000
17. Literacy Level :-...................................................................................
   Intermediate
   Graduate
   Post Graduate

MEDICAL HISTORY:-

Indicate whether you have any following problems:-

Breathlessness -  Y □ N □
Bone Disorder -  Y □ N □
PCOD -  Y □ N □
Heart Disease -  Y □ N □
High Blood Cholesterol -  Y □ N □
Diabetes - Y Y N N
Hypertension- Y N N N

1. Any appetite Complaints
2. Any other disease:
3. Do you smoke? Y N
4. Do you ingest Alcohol? Y N
5. How many times per week you take alcohol?
   Two times a week
   Three times a week
   > Three times per week
6. Have you ever had concerns about your weight? Y N
7. Have you ever tried to lose weight in past? Y N
8. List any food allergies or intolerances
9. Do you take your meals regularly? A. Regular B. Irregular
10. Do you take breakfast? A. Daily B. Once or twice per week C. Rarely
11. How many times you eat meals? A. One time B. Two time C. Three time D. Four time
12. How often you take junk food in addition to regular meal? A. Daily B. Three or Four times per week C. Once or twice per week D. Rarely
13. How often you eat green, red, yellow coloured vegetables? A. Daily B. Three or Four times per week C. Once or twice per week D. Rarely
14. How often you eat fruits? A. Daily B. Three or Four times per week C. Once or twice per week D. Rarely
15. Frequency of eating fried food? A. Daily B. Three or Four times per week C. Once or twice per week D. Rarely
16. How often you eat out A. Twice a week B. Thrice a week C. More than three times a week
17. Milk and milk products intake daily A. One time B. Two time C. Three time D. Four time
18. Type of fat used during cooking A. Refined oil B. Soyabean oil C. Sunflower oil D. Any other
19. Intake of sugar daily A. 2-3 tsp/day B. 4-5 tsp/day C. 5-6 tsp/day D. > 7 tsp / day
19. Intake of sweets daily
a) 2 times/day  
b) 3-4 times/day  
c) 4-5 times/day  
d) Any other pls specify

20. What kind of fruits you take daily
a) Mango  
b) Banana  
c) Grapes  
d) Citrus Fruits  
e) Any other pls specify

21. Roots and tubers taken daily or specify
A. Twice a week  
B. Thrice a week  
C. More than three times a week  
d) None of above

23. Is there any discomfort in walking
Yes .......  
No ...........

24. Do you take milk daily
Yes .......  
No ...........

25. How many times milk is taken daily
a) 2 times/day  
b) 3-4 times/day  
c) 4-5 times/day  
d) Any other pls specify

26. How many times curd is taken daily
a) 2 times/day  
b) 3-4 times/day  
c) 4-5 times/day  
d) Any other pls specify

27. How many times Paneer is taken daily
a) 2 times/day  
b) 3-4 times/day  
c) 4-5 times/day  
d) Any other pls specify

28. How many times Non-Vegetarian food is taken daily
a) 2 times/day  
b) 3-4 times/day  
c) 4-5 times/day  
d) Any other pls specify

29. How many times Nuts are taken daily
a) 2 times/day  
b) 3-4 times/day  
c) 4-5 times/day  
d) Any other pls specify

30. Do you take Bran chapatti ?
Yes ...........  
No ..............

31. How much water you take daily ?
a) Two glasses  
b) Three – Four glasses  
c) 5-6 Glasses  
d) > 7 glasses

32. The kind of physical activity followed daily:-
A. Walking (<2Km)  
B. Walking (>4Km)  
C. Walking (2-4Km)
33. The other form of physical activity are:
A. Climbing stairs
B. Aerobics
C. Yoga
D. None of above

34. How is the Lifestyle?
Sedentary - yes or no  Gymming 1-2 hrs /day - yes or no  Walking / Running daily – Yes or no

35. Do you feel lonely?
Yes 2) No

36. Do you socialize?
Yes 2) No

37. How often you go out?
Once a day 2) Two times a week
3) Three times a week 4) Daily
5) Any other .................................................................

38. Do you like to cook?
Yes 2) No

39. What are your hobbies?
........................................................................................................

40. Do you take decisions of your family?
Yes 2) No

41. Do you miss working or being engaged in work?
Yes 2) No

42. Are there any family disputes?
Yes 2) No

43. Do you have symptoms of headache?
Yes 2) No

44. Do you have symptoms of sudden fear or sadness?
Yes 2) No

3) Any other ……………………

45. Do you remember birthdays / anniversaries or important dates?
Yes 2) No

ANNEXURE II
Dietary recall 24x7 method

<table>
<thead>
<tr>
<th>Meals</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snacks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please begin completing both sides of this questionnaire as soon as possible

Liker scale

PERMA MODEL Application
Give yourself Points 1 being the lowest and 3 being the highest marks/points
Positive attitude towards life
Engagement in life
Relationships compatibility / meaning of life
Accomplishments – do you feel that you have achieved enough in life?

The response 1 was given 5 marks
The response 2 was given 15 marks
The response 3 was given 25 marks