CHAPTER - IV

METHOD OF INVESTIGATION

This chapter deals with research design, nature of sample, description of test materials and procedure followed in administering the tests and package of intervention programmes.

4.1 RESEARCH DESIGNS

To answer the two main questions empirically thereby testing the seven hypotheses stated in the previous chapter, two approaches were followed. Research designs based on these two approaches were

a. Ex-Post-Facto and
b. Experimental

(A1) Ex-post-facto Approach - Design 1

A multivariate research design, cross sectional in nature was used with age, marital status, years of marital life, educational level, employment status, nature of employment, years of employment, hours of work, family size, family type, family income, religion and marital status of children as demographic determinants; onset of puberty, menopausal status, onset of menopause, history of hysterectomy, food habits and body mass index as clinical determinants; leisure time activities and intervention for well-being as psychological determinants and various dimensions of bio-psycho-social well-being as the ultimate criterion variables.
(A₂) Ex-post-facto Approach - Design 2

An univariate research design, cross sectional in nature was followed for biochemical analysis with blood parameters to assess estrogen, progesterone, cardiovascular risk factor, triglyceride and calcium level in blood at three phases namely pre-menopausal, peri-menopausal and post-menopausal as X-variables and various dimensions of well-being as Y-variables.

(B) Experimental Design

Certain variables responsible for the enhancement of well-being such as physical health status and psychological health status were manipulated with the help of two intervention strategies such as naturopathy or nature-cure and psychological intervention in the form of Jacobson’s deep muscle relaxation training. A three group pre-test and post-test design (with two experimental and one control) was used as shown in diagram below:

Experimental Group I \( (n = 10) \)  \( Y_1 \)  \( X_1 \)  \( Y_{11} \)  \( Y_{111} \)
Experimental Group II \( (n = 10) \)  \( Y_1 \)  \( X_2 \)  \( Y_{11} \)  \( Y_{111} \)
Control Group \( (n = 10) \)  \( Y_1 \)  \(-X\)  \( Y_{11} \)  \( Y_{111} \)

\( Y_1 \)  =  Base level assessment
\( Y_{11} \)  =  Post intervention assessment (15 days after base level)
\( Y_{111} \)  =  Follow-up assessment (30 days later)
\( X_1 \)  =  Naturopathy or nature-cure intervention
\( X_2 \)  =  Psychological intervention (Jacobson’s deep muscle relaxation)
\(-X\)  =  No intervention
4.2 NATURE OF SAMPLE

Ex-post-facto Study I

For this study, using purposive sampling method 300 middle aged women between 40 and 55 years were selected from the population. All of them were willing to co-operate in the study. The approach being ex-post-facto, principles of randomization could not be adequately followed especially while assigning the subjects to various conditions chosen for the investigation as determinants of bio-psycho-social well-being. Following are the further details of the sample given in a nutshell with reference to certain important variables.

Table 4.01

Details of the Sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>Descriptive Statistical Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Mean age = 48 yrs. 2 months</td>
</tr>
<tr>
<td></td>
<td>Standard Deviation = 5.4</td>
</tr>
<tr>
<td>Family Income</td>
<td>Mean monthly income = Rs. 5805/-</td>
</tr>
<tr>
<td></td>
<td>Standard Deviation = Rs. 1204.2</td>
</tr>
<tr>
<td>Level of Education</td>
<td>School education = 124</td>
</tr>
<tr>
<td></td>
<td>Graduates = 96</td>
</tr>
<tr>
<td></td>
<td>Professional education = 80</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Unmarried = 75</td>
</tr>
<tr>
<td></td>
<td>Married = 89</td>
</tr>
<tr>
<td></td>
<td>Separated = 66</td>
</tr>
<tr>
<td></td>
<td>Widowed = 70</td>
</tr>
<tr>
<td>Employment Status</td>
<td>Employed = 150</td>
</tr>
<tr>
<td></td>
<td>Unemployed = 150</td>
</tr>
<tr>
<td>Type of Family</td>
<td>Nuclear family = 184</td>
</tr>
<tr>
<td></td>
<td>Extended family = 89</td>
</tr>
<tr>
<td></td>
<td>Joint family = 27</td>
</tr>
<tr>
<td>Variables</td>
<td>Descriptive Statistical Details</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Food Habits</td>
<td>Vegetarians = 97</td>
</tr>
<tr>
<td></td>
<td>Nonvegetarians = 203</td>
</tr>
<tr>
<td>Menopausal Status</td>
<td>Regular menstruation (pre-menopausal) = 88</td>
</tr>
<tr>
<td></td>
<td>Irregular menstruation (peri-menopausal) = 65</td>
</tr>
<tr>
<td></td>
<td>No menstruation (post-menopausal) = 147</td>
</tr>
<tr>
<td>Onset of Puberty</td>
<td>Early = 76</td>
</tr>
<tr>
<td></td>
<td>Normal = 192</td>
</tr>
<tr>
<td></td>
<td>Delayed = 32</td>
</tr>
<tr>
<td>History of Gynaecological Problem</td>
<td>History of gynaecological problems = 78</td>
</tr>
<tr>
<td></td>
<td>No gynaecological problems = 222</td>
</tr>
</tbody>
</table>

Ex-post-facto Study 2

In this study 18 women in the age group ranging from 40 years to 55 years were placed in three groups (6 in each group as per the condition) namely pre-menopausal (regular menstruation), peri-menopausal (episodes of irregular menstruation) and post-menopausal (no menstruation minimum for one year). Though the study was ex-post-facto in nature, it involved laboratory experimental techniques such as drawing blood to analyse the levels of estrogen and progesterone (ovarian hormones), T₁ and T₄ (Thyroid hormones), blood glucose, haemoglobin, total cholesterol, high density lipoprotein cholesterol (HDL), low density lipoprotein cholesterol (LDL), very low density lipoprotein cholesterol (VLDL), triglyceride and calcium with the following inclusion and exclusion criteria.
Inclusion criteria

1. Women in the pre-menopausal group with regular menstrual cycle and estimated estrogen and progesterone levels in blood falls within the range of reference value.

2. Women in the peri-menopausal group where irregular menstruation being reported for one year.

3. Women in the post-menopausal group where there was no menstruation minimum for 1 year.

Exclusion criteria

1. Women with obesity

2. Women with anaemia

3. Women with hyper or hypothyroidism

4. Women with diabetic mellitus

5. Women with a history of hysterectomy

Further important details of the sample are briefly tabulated below:
Table 4.02
Brief Description of the Sample on Certain Important Variables

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Pre-Menopausal Phase</th>
<th>Peri-Menopausal Phase</th>
<th>Post-Menopausal Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>Mean = 42 years</td>
<td>Mean = 46 years</td>
<td>Mean = 52 yrs. 4 months</td>
</tr>
<tr>
<td></td>
<td>SD = 1 year</td>
<td>SD = 1 year 3 months</td>
<td>SD = 3 yrs. 5 months</td>
</tr>
<tr>
<td><strong>No. of days since last menstruation</strong></td>
<td>Mean = 8.2 days</td>
<td>Mean = 54.2 days</td>
<td>Mean = 4 yrs. 2 months</td>
</tr>
<tr>
<td></td>
<td>SD = 4.63 days</td>
<td>SD = 8.27 days</td>
<td>SD = 2.3 years</td>
</tr>
<tr>
<td><strong>Estrogen (pg/ml)</strong></td>
<td>Range = 90.81 to 288.53</td>
<td>Range = 29.40 to 149.59</td>
<td>Range = 24.41 to 54.34</td>
</tr>
<tr>
<td><strong>Progesterone (ng/ml)</strong></td>
<td>Range = 0.13 to 8.80</td>
<td>Range = 0.10 to 5.60</td>
<td>Range = 0.12 to 1.15</td>
</tr>
<tr>
<td><strong>T3 (pg/ml)</strong></td>
<td>Range = 0.01 to 2.89</td>
<td>Range = 1.41 to 3.94</td>
<td>Range = 0.82 to 3.92</td>
</tr>
<tr>
<td><strong>T4 (ng/dl)</strong></td>
<td>Range = 0.8 to 1.13</td>
<td>Range = 0.64 to 1.88</td>
<td>Range = 1.07 to 1.98</td>
</tr>
<tr>
<td><strong>Total cholesterol (mg/dl)</strong></td>
<td>Range = 153 to 200</td>
<td>Range = 148 to 216</td>
<td>Range = 159 to 266</td>
</tr>
<tr>
<td><strong>HDL cholesterol (mg/dl)</strong></td>
<td>Range = 33 to 70</td>
<td>Range = 21 to 35</td>
<td>Range = 22 to 32</td>
</tr>
<tr>
<td><strong>LDL cholesterol (mg/dl)</strong></td>
<td>Range = 96 to 120</td>
<td>Range = 80.5 to 157</td>
<td>Range = 106.4 to 201.8</td>
</tr>
<tr>
<td><strong>VLDL cholesterol (mg/dl)</strong></td>
<td>Range = 10 to 32.4</td>
<td>Range = 29.0 to 50.8</td>
<td>Range = 28.6 to 56.2</td>
</tr>
<tr>
<td><strong>Triglyceride (mg/dl)</strong></td>
<td>Range = 50 to 162</td>
<td>Range = 145 to 254</td>
<td>Range = 168 to 258</td>
</tr>
<tr>
<td><strong>Risk factor</strong></td>
<td>Range = 2.9 to 5.0</td>
<td>Range = 4.7 to 8.0</td>
<td>Range = 5.5 to 9.5</td>
</tr>
<tr>
<td><strong>Calcium (mg/dl)</strong></td>
<td>Range = 9.5 to 11.0</td>
<td>Range = 8.6 to 10.8</td>
<td>Range = 8.5 to 10.5</td>
</tr>
</tbody>
</table>
Experimental Study

Ten middle aged women who were undergoing treatment in naturopathy at Naturopathy Hospital, yoga and Research Institute, Chennai, constituted the sample in the first experimental group. All of them had some definite somatic problems with or without secondary psychological reactions. Another 10 middle aged women who had more of psychological stress with or without somatization were considered for sample selection in the second experimental group to receive psychological intervention in the form of Jacobson's deep muscle relaxation training. All these 10 middle aged women were employed in a city college at Chennai. From the same institution 10 middle aged women with the same clinical and psychological background were chosen and they were assigned to control group. There was only one group which formed control for the second experimental group; while there was no similar control group for experimental group 1, because it was not agreed upon by the naturopathy professionals who felt that it would be unethical to deprive the women subjects in the control group, of the benefits which were given to those in experimental group. However to counter this methodological problem to some extent, it was decided to confine the scope of the study to comparison of pre-test scores to subsequent assessment scores of the same individuals who would form their own control. The subjects in experimental and control groups did not differ significantly on the extraneous variables and also on the dependent variables at the base level. Following are some of the important details of the subjects in the experimental and control groups.
### Table 4.03

**Description of the Subjects in Experimental Group 1 (Naturopathy), Experimental Group 2 (Relaxation) and Control Group**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Experimental Group 1</th>
<th>Experimental Group 2</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>48 years to 54 years</td>
<td>49 years to 55 years</td>
<td>49 years to 54 years</td>
</tr>
<tr>
<td>Family Income</td>
<td>Monthly Rs.15000/- to Rs.20000</td>
<td>Monthly Rs.15200/- to Rs.20000</td>
<td>Monthly Rs.14800/- to Rs.21000</td>
</tr>
<tr>
<td>Educational Level</td>
<td>Literates</td>
<td>Literates</td>
<td>Literates</td>
</tr>
<tr>
<td>Menopausal Status</td>
<td>Post-menopausal phase</td>
<td>Post menopausal phase</td>
<td>Post menopausal phase</td>
</tr>
<tr>
<td>Clinical Status</td>
<td>Somatic problems with/ without secondary psychological reactions</td>
<td>Psychological stress with/ without somatization</td>
<td>Psychological stress with/without somatic problems</td>
</tr>
</tbody>
</table>

### 4.3 TOOLS USED FOR THE STUDY

#### 4.3.1 Tools of Assessment

The following tools were used for assessment in the present study.

a. Personal Data Sheet  
   (Interview Schedule) - Appendix I

b. Health Perception Scale - Appendix II

c. Adjustment Inventory - Appendix III

d. Life Experiences Survey - Appendix IV

e. Menopause Symptoms Checklist - Appendix V

f. Diet Management Checklist - Appendix VI

g. Affect Balance Scale - Appendix VII

h. Life Satisfaction Index - Appendix VIII

i. Biochemical Analysis

A brief description of the assessment tools is given in the following paragraphs.
a. Personal Data Sheet

A detailed interview was conducted in which questions pertaining to personal data were asked and recorded. Demographic variables included age, marital status, years of marital life, educational level, employment status, nature of employment, years of employment, hours of work, family size, family type, family income, religion and marital status of children. Brief history on onset of puberty, menopausal status, onset of menopause, history of hysterectomy, food habits and body mass index was collected. Details on leisure time activities and intervention for well-being were recorded.

b. Health Perception Scale

Health Perception Scale (HPS) was constructed and validated specially for this study by Swaminathan and Banoomathi (1995). It was constructed with an aim to assess the women's health status in respect to various systems of the body. The major health issues in the 11 systems of the human body are indicated in HPS by items 1 to 48 as indicated below:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Systems of the Body</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sensory organs</td>
<td>8</td>
</tr>
<tr>
<td>2.</td>
<td>Skin</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Infectious diseases</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>Nutritional deficiency diseases</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>Respiratory system</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Digestive system</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>Cardiovascular system</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>Skeletal and Muscular systems</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Excretory system</td>
<td>2</td>
</tr>
<tr>
<td>10.</td>
<td>Endocrine and Reproductive systems</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>Nervous system</td>
<td>3</td>
</tr>
</tbody>
</table>
The items were scored either as 'Yes' or 'No'. Hence higher the score, poorer the health status. Higher the score indicates better perception or awareness of health.

HPS was administered to 330 middle aged women patients to establish discriminant validity by working out the 't' ratio to see whether the mean value obtained by the criterion group consisting of 30 individuals suffering from any disorder pertaining to that particular system and the mean value of the rest of the sample (300) who formed the control group differed significantly on each item of a particular system. The HPS discriminated significantly the criterion and control group on every item and also on the total score of the system. The 't' values discriminating the two groups itemwise and systemwise ranged from 2.02 to 4.31 and 3.160 to 4.646 respectively which established strongly the criterion validity of the scale.

Internal consistency of the HPS was ascertained by working out inter item correlation. The range of inter item correlation values were from 0.22 to 0.70 and the values of item total correlation and system total correlation ranged from 0.36 to 0.93 and 0.38 to 0.88 respectively. Internal consistency of the scale was thus found to be high.

c. Adjustment Inventory

The adjustment inventory was constructed by Ramamurthi (1968) to find out the extent to which the elderly individuals (middle aged and old) interaction with the environment (that is home or family and social activities or interactions outside the home) and dealings with one's self (that is one's health status and attitudes, one's emotional life and one's feelings of self worth and usefulness) are satisfactory and whether in these dealings one is free from conflict, worry and anxiety. The inventory was designed to
cover the following areas (i) Home, (ii) Social, (iii) Emotional, (iv) Health and (v) Self. Twenty items in each of these five areas of adjustment thus making totally 100 items have been included in the inventory with the response format of yes or no. The total adjustment score for each individual besides for each area of adjustment could be calculated.

A test-retest reliability calculated on 80 middle aged individuals with a 10 day interval between test-retest gave a coefficient of 0.88. Criterion validity was established by administering the inventory to a group of 40 welladjusted and 40 maladjusted individuals and critical ratio values were calculated for finding out the significance of the mean differences between the 2 groups on the items. The critical ratio values ranged from 22.8 to 26.5. Thus the reliability and validity were found to be high.

d. Life Experiences Survey (LES)

This tool constructed by Sarason, Johnson and Siegel (1978) could be regarded as an off-shoot of work by Holmes and Rahe (1967) on Schedule of Recent Experiences (SRE).

The life experiences survey is a 47 item self-report measure which allows respondents to indicate events which have occurred in the last one year. The respondents should separately rate the occurrence, desirability and impact of events they have experienced. Ratings are on a 7 point scale from -3 through 0 to +3.

Regarding reliability, two test-retest studies yielded correlations of .19 and .53 (p<.001) for the positive score. For the negative score, co-efficients were .56 (p<.001)
and .88 (p<.001). After an eight week interval, reliability co-efficients of .61, .72 and .82 were obtained for positive, negative and total change scores.

When validated against the Schedule of Recent Experiences (SRE), the correlation co-efficient was found to be 0.67. Thus both reliability and validity of the Life Experiences Survey were found to be highly satisfactory.

e. Menopause Symptoms Checklist

This tool constructed by Blatt et al., (1953) has a list of 28 symptoms each of which should be viewed whether it occurred in the last 12 months, frequently or a few times or did not occur at all. A pilot study was conducted on a sample of 60 middle aged women (from 40 yrs to 55 yrs) drawn from the pre-menopausal, peri-menopausal and post-menopausal periods. There was significant difference on each of the 28 symptoms among these 3 groups of middle aged women. Those who were in peri-menopausal stage scored the highest followed by those in pre-menopausal and post-menopausal stages. Thus discriminant validity was established. Internal consistency was checked by finding out the inter item and item total correlation co-efficient. Test-retest reliability co-efficient was found to be 0.75. Since all these psychometric aspects of the Menopause Symptoms Checklist were found to be sound, this was used as a standard tool to assess the menopause symptoms in the present study.

f. Diet Management Checklist

Diet Management checklist (DMCL) was developed by Swaminathan and Banoomathi (1995) to assess the role of diet on health of middle aged people and senior citizens.
DMCL consists of 20 statements out of which first 10 statements are about regular dietary pattern. The next 10 statements are related to modified dietary pattern as per age. The responses were obtained on a four point scale ranging from almost always to almost never from 200 middle aged women selected randomly from the population. High scores indicate better diet management. Internal consistency was ascertained by working out item total correlation and inter item correlation. The values of item total correlation ranged from .68 to .80 and the values of inter item correlation ranged from .21 to .64. Thus the internal consistency of the tool was found to be high.

Ten experts in the field of Dietetics were requested to rate each of the 20 statements on a 3 point scale whether they were highly valid or moderately valid or not at all valid. Their suggestions were then incorporated to make all the 20 statements highly valid with regard to the criterion of the measure namely diet management. As this tool was also found to be highly internally consistent and valid, it was used as a tool of assessment in the present investigation.

g. Bradburn Affect Balance Scale

Bradburn’s (1969) research was about the features of everyday life as well as long term social change to feelings of psychological well-being. The research brought out 2 independent dimensions (positive affect and negative affect) which would interact with each other to determine one’s psychological well-being.

The Affect Balance Scale has 10 items of which 5 assess positive affect and the rest negative affect. The response format of the scale has two alternate categories namely (1) yes or (2) no.
Test-retest reliability with a 3 day interval was about 0.90 on both dimensions and also total score. An interval of about three months yielded a test-retest reliability of 0.76. A correlation of 0.66 has been obtained for the Affect Balance Scale and the Life Satisfaction Index (Bradburn, 1969). The correlation between the Affect Balance Scale and Rosow Morale Scale was 0.61. Both the Life Satisfaction Index and Rosow Morale Scale Index include a rating of global happiness. So it may be concluded that the Affect Balance Scale has high reliability and validity (Bradburn, 1969).

h. Life Satisfaction Measure

Campbell et al., (1976) constructed this test to measure life satisfaction. There are 7 items with a Likert-type of scaling ranging from 1 to 5 and the response format being very happy, pretty happy, happy, not happy and not too happy. Test-retest reliability has been reported as 0.70 and for validity, correlations have been worked out with the Index of Domain Satisfaction (r=0.70) and with Psychological Well-being (r=0.57). Both the Index of Domain Satisfaction and Measure of Psychological Well-being against which the Life Satisfaction Measure has been validated are constructed by Campbell and his associates (1976). Thus the Life Satisfaction Measure is found to be reliable and valid.

i. Bio-chemical Analysis

Bio-chemical analysis was carried out for 18 pre, peri and post-menopausal women in the laboratory of Nagamani Hospital, Chennai. Blood was drawn from anti cubital vein to analyse the following parameters:

The reference value for the above parameters is furnished in Chapter-1.

4.3.2 Administration of Tests

Personal data were collected from the selected subjects and then Health Perception Scale, Adjustment Inventory, Life Experiences Survey, Menopause Symptoms Checklist, Diet Management Checklist, Affect Balance Scale and Life Satisfaction Measure were administered as per the instructions given in the manual of respective scales to the women subjects in the sample for ex-post-facto and experimental research studies.

4.3.3 Scoring of Tests

a. Health Perception Scale

For each item if the response is "yes" one point will be given and no point will be given if the response is "no". So the scores will range from 0 to 48. Higher the score better the awareness of one's health, but poorer the health status as per the subject's perception.

b. Adjustment Inventory

Except for the items specified below, "no" response should be given a point. The items for which "yes" response is marked, one point is given to the following items:
The maximum possible score is 100. Higher the score, better the adjustment.

c. Life Experiences Survey

Scores include a positive score, a negative score and a total change score. The negative score is determined by adding up all negative point ratings which the subject has marked on the instrument. The positive score is determined by adding up all positive point ratings which the subject has marked on the instrument. The total score is the sum of absolute values of negative and positive change scores. The total score on ratings of the 47 events plus the 3 blank spaces can range from -150 through 0 to +150. Negative scores can range from -150 to 0 and similarly positive scores can range from 0 to +150.

d. Menopause Symptoms Checklist

Symptoms which have not occurred at all in the past year are given one point each. Symptoms which have occurred infrequently in the past year are given 2 points each. Symptoms which have occurred frequently are given 3 points each, while a point is added to each of those symptoms which caused worry. The item scores are summed up and the total can range from 28 to 112. The higher the score, the more the menopause symptoms.

e. Diet Management Checklist

As the responses are obtained on a 4 point scale, the number which the respondent encircles is the score for that particular item. The scores are finally summed up and the total can range from 20 to 80. Higher the score better the diet management.
f. Bradburn Affect Balance scale

The items which assess positive affect (numbers 1, 3, 5, 7 and 9) are scored 1 for "yes" and 0 for "no". The items which assess negative affect (numbers 2, 4, 6, 8 and 10) are scored -1 for "yes" and 0 for "no". The sum of points from these two clusters is the affect balance score which can range from +5 through 0 to -5. Positive score reflects the positive affect while negative score reflects the negative affect. The higher the score on the positive side the better the emotional life.

g. Life Satisfaction Measure

Each item is scored on a Likert type scale from 1 to 5. Thus the total score can range from 7 to 35. The higher the score the more the life satisfaction.

4.3.4 Tools of Intervention

Two intervention strategies were followed namely (a) Naturopathy and (b) Relaxation

a. Naturopathy

The first intervention programme was conducted at Naturopathy Hospital, Yoga and Research Institute, Chennai. Naturopathy is becoming popular as people are realising the toxic effects of drugs and seeking for a safe alternative. It is a non-pharmacological system of healing. Nature cure is the central theme of Naturopathy.

Naturopathy or nature cure believes that the human body owes its existence to nature's five elements - Earth, Water, Air, Fire and Ether-a composite representation of
all forces of nature. All these five elements in the form of natural resources like diet, fasting, exercises, hydrotherapy, mud therapy etc were adopted by this institute for the treatment of hypertension, ischaemic heart disease, paralysis, digestive disorder, hyperacidity, peptic ulcer, amoebiasis, bronchial asthma, sinusitis, migraine, rheumatoid arthritis, osteo arthritis, cervical and lumbar spondylitis, gouts, hyper and hypothyroidism, insomnia, nervous system disorders, menstrual disorders and skin diseases.

The treatment programme was designed for the in-patients by the Doctor of Naturopathy. A brief description of the package is as follows:

* Recording of health problems
* Regulated life style
* Yoga
* Pranayama
* Meditation
* Dietetics and fasting
* Massage
* Hydrotherapy
* Mud bath
* Pebble walk
* Yoganidhra

**Recording of health problems**

In this study, a sample of 10 middle aged women in-patients with various health complaints like spondilitis, rheumatoid arthritis, skin infection, obesity, diabetes, back pain
and constipation were selected. A case sheet maintained by the Hospital authorities showing the patients personal data, health problems and allopathic treatment taken earlier enabled the investigator to overview the patients in the initial treatment stage of naturopathy.

**Regulated life style**

Regulated life style is essential to prevent many of the health problems. The prime aim of regulated life style is to make the patients get acquainted with naturopathy treatment. Regulated life style such as prayer, meditation, pranayama, exercise, therapy, massage, diet, yogamudra and avoidance of indiscriminate excessive medication and addictions helped in preventing and curing most of the common ailments and chronic diseases within the shortest period of 15 days.

**Yoga**

Yoga, a complete science of life makes one feel more energetic. It increases the lung capacity and metabolic rate. It also promotes the efficiency of heart and blood circulation.

During the 15 days residential treatment period, the patients were trained to do yogasanas altogether for one hour in the morning and evening (Appendix - IX).

In the present study, the subjects were repeatedly trained with yogasana to ease the tension and stress of modern day living. Regular practice of yoga brought about considerable reduction in blood pressure, weight and elevated lipid level in the blood.
Pranayama

Pranayama refers to absorption of oxygen to activate the functions of the vital organs of the system. Pranayama practised regularly cleaned the entire respiratory system making respiration smooth and effortless (Appendix - X).

Meditation

Meditation is defined as a profound state of quietude for the entire organism. Meditation enabled an individual to have increased energy, higher self-esteem, greater self-confidence and better relationship.

Dietetics and Fasting

"Diet is Health, Diet is Medicine"

- Socrates

Naturopathy ensures the right kind of food to promote good health. Naturopathy recommends the following principles strictly to adhere in planning diet to lead a healthy life.

a. A balanced diet is necessary according to age, weight and disease conditions.

b. Avoiding or reducing sugar, salt, fried or processed food, baked items, spices, red chilli, chilli powder, tamarind and vegetable and animal fat is advisable.

c. Non-vegetarian foods, refined cereals, coffee, tea and foods which have chemical additives are strictly prohibited in formulating the diet.

d. Importance is given to foods like unrefined whole grain cereals, fresh vegetables, fruits and organically grown foods.

e. In fasting, a patient is kept on a low calorie liquid diet for a few days depending on the person's health condition. In fasting, the body utilizes the stored glycogen
and fat reserves for energy. Toxins in the body are excreted during fasting time. Fasting is mainly done in cases of obesity, hypertension, fever etc. Persons who have diabetes, heart disease and anaemia are not kept on fasting.

A well planned diet sheet designed by the Doctor of Naturopathy to suit the health conditions of patients is given below:

**Diet Sheet**

<table>
<thead>
<tr>
<th>Time</th>
<th>Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.00 A.M.</td>
<td>A glass of water</td>
</tr>
</tbody>
</table>
| 7.30 A.M. | A glass of lemon juice with jaggery or honey (or)  
|           | A glass of fenugreek water (or)                                           |
|          | A glass of raw pumpkin juice (or)                                         |
|          | A glass of butter guard juice (for diabetic patients)                     |
| 10.00 A.M. | Dry chappathi + boiled vegetables + boiled greens (or)                    |
|          | Dry chappathy + boiled vegetables + boiled greens + a cup of rice with dhal + butter milk. (or) |
|          | Vegetable kichidi + boiled greens (or)                                    |
|          | Boiled vegetables + boiled greens (or)                                    |
|          | Raw salad + fruits                                                       |
| 1.00 P.M.  | Citrus fruit juice (or)                                                  |
|           | Tender coconut water                                                     |
| 4.00 P.M.  | Raw knol khol juice (or)                                                 |
|           | Raw banana stem juice (or)                                               |
|           | Vegetable soup                                                           |
| 7.00 P.M.  | Dry chappathi + boiled vegetables + boiled greens (or)                    |
|           | Vegetable kichidi + boiled greens (or)                                    |
|           | Raw salad + fruits                                                       |
Progressive weight reduction and improvement in health as a result of dieting gave encouragement to women from time to time. A systematic dietary approach which made them think that it is not the quantity and richness of the food which really matters, but digestibility and assimilation to offer required stamina and benefit is the key consideration.

**Massage**

Massage helps an individual to improve the venous lymphatic circulation, relax the muscles, stimulate the peripheral nervous receptors and decrease the pain. Oil massage given to patients augmented the healing powers.

**Hydrotherapy**

Water has certain physiological effects on the body depending on its form, temperature and pressure. Based on this, many treatments are developed like enema, steam bath, hip bath, hot foot bath and spinal bath. Enema attempts to relieve constipation. The hip bath and steam bath are effective in stimulating the stomach, liver, spleen, intestines, kidneys, digestive organs and in maintaining the efficiency of the body. In general, hydrotherapy given to patients promoted freshness to the body.

**Mud bath**

Mud bath is an external therapeutic healing process using mud. Mud has certain medicinal properties depending upon its mineral content. The women subjects reported the beneficial effects of mud bath on skin problems like dermatitis, eczema etc.
**Pebble Walk**

A small tank measuring approximately 12’x10’x1’ permanently packed with moderate size pebbles on floor and filled with fresh water helped the patients to walk with joy inside the tank daily. It served as a means of acupressure to activate the entire systems of the body.

**Yoganidhra**

Yoganidhra is a yogic tranquillizer which helps to achieve total physical, cognitive and emotional relaxation. The subjects were instructed to practise yoganidhra with the help of a prepared cassette. Yoganidhra enabled the subjects to relax the body and mind (Appendix - XI).

**Follow-up Study**

The subjects were studied on the 15th day of treatment period and again on the 30th day when they came to the Naturopathy Hospital as out-patients for health check up.

The package programme given to women in-patients for 15 days, follow-up programme in home environment for the next 15 days and the total number of hours spent for Naturopathy intervention are presented in the following sequence chart.
**SEQUENCE CHART**

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Days 1-15</th>
<th>Days 16-30</th>
</tr>
</thead>
</table>
| Selection of cases according to the inclusion criteria, collecting clinical history. | Time spent everyday In minutes  
Prayer ................ 15  
Meditation ............ 10  
Walking ............... 25  
Yoga .................. 60  
Therapy ............... 60  
Pranayama ............ 10  
Yoganidhra .......... 15  
Pebble walk .......... 15  
Diet .................. 25  
Total ................ 4 hrs  | Time spent everyday In minutes  
Prayer ................ 10  
Meditation ............ 10  
Walking ............... 45  
Yoga .................. 60  
Pranayama ............ 10  
Yoganidhra .......... 15  
Diet .................. 30  
Total ................ 3 hrs  |

Total number of hours spent for Naturopathy intervention was as follows:

1. 10 patients x 4 hrs/day x 15 days = 600 hrs
2. 10 patients x 3 hrs/day x 15 days = 450 hrs
   Total = 1050 hrs

**b. Training in Deep Muscle Relaxation (Jacobson’s Method)**

The second phase of experimental intervention programme was conducted at Queen Mary’s College, Chennai, on 10 middle aged women suffering from headache, backpain and blood pressure all of which were precipitated by psychological stress. Jacobson’s Progressive Relaxation Technique was taught to patients by introducing four conditions necessary to produce the relaxation response. They were:

1. Quiet environment
2. Closed eyes
3. A comfortable position and
4. A repetitive mental device.
The first three conditions lower input to the nervous system while the fourth condition lowers its internal stimulation.

The procedure for relaxation is given below.

1. **Relaxation of Arms**:

1. Settle back comfortably.....relax.

2. Clench your right fist.....tighter and tighter.....study the tension........feel the tension in your right fist.....hand forearm.....(about 10 seconds).

3. Now relax......let the fingers become lose.....observe the contrast in your feeling.....try to become more relaxed all over (about 20 seconds).

4. Once more clench your right fist.....tight.....hold it.....notice the tension again.

5. Now let go relax.....fingers, straighten out.....notice the difference again.

6. Now repeat that with left fist.....clench your left fist.....let the body relax ..... clench it tighter and tighter and note the tension.

7. Relax.....and enjoy the contrast.

8. Repeat that once more.....clench the left fist tight and tense.

9. Relax and feel the difference.....continue relaxing for a while.

10. Clench both fists tighter and tighter, both fists tense, forearms tense and study the sensation.

11. Relax.....straighten your fingers and feel the relaxation, continue relaxing your hands and forearms more and more.

12. Now bend your elbows and tense your biceps, tense them harder.....and study the tension feelings (about 10 seconds).

13. Straighten the arms and relax.....relax and feel the difference. Let the relaxation develop (about 20 seconds).
14. Once more tense your biceps.....hold the tension and observe it carefully.
15. Straighten the arms and relax.....relax to the best of your ability, pay close attention to your feeling when you relax and tense up.
16. Straighten your arms.....straighten them to feel most tension in the triceps muscle along the back of your arms. stretch your arms and feel the tension.
17. Now relax. arms back into a comfortable position. Let it proceed on its own .....arms should feel comfortably heavy as you allow them to relax.
18. Straighten out once more. and feel the tension in the triceps muscles, straighten them.....feel the tension.
19. Relax.....concentrate on pure relaxation without any tension.....let arm be comfortable.....relax further.....deeper and deeper levels of relaxation.

**Relaxation of Facial area with Neck , Shoulders and Upper Back :**

1. Let all your muscles be loose and heavy.....settle back comfortably.
2. Wrinkle your forehead.....wrinkle it tighter (about 10 seconds).
3. Stop wrinkling.....relax.....and smooth it out.....picture the entire forehead, scalp becoming smoother as the relaxation increases (about 20 seconds). Repeat step nos.2 and 3 once more as before.
4. Frown and crease your brows. ....and study the tension (about 10 seconds).
5. Let go of the tension again.....smooth the forehead once more (about 20 seconds) (Repeat step nos. 4 & 5 once more as before).
6. Close your eyes tighter and tighter and feel the tension (about 10 seconds).
7. Relax your eyes. keep it closed. gently, comfortably and notice the relaxation (about 20 seconds).
Repeat step Nos.6 & 7 once more.
8. Clench your jaws.....bite your teeth together, study the tension throughout the jaws (about 10 seconds).

9. Relax your jaws now.....lips part slightly.....appreciate the relaxation (about 20 seconds).

10. Press your tongue hard against the roof of the mouth.....look for the tension (about 10 seconds).

11. Let your tongue come to a comfortable position (about 20 seconds).


13. Relax your lips.....note the contrast between tension and relaxation, feel the relaxation all over your face, forehead, scalp, eyes, jaws, lips, tongue and throat, relaxation progresses further (about 20 seconds).

14. Now neck muscles.....press your head back as far as you feel the tension in the neck (about 5 seconds).

15. Roll it to the right and feel the tension shift (about 10 seconds).

16. Roll it to the left (about 10 seconds).

17. Straghten your head and bring it forward, relax (about 20 seconds).

18. Shrug your shoulders right up, hold the tension (about 10 seconds).

19. Drop it.....feel the relaxation in neck and shoulder. Relax (about 20 seconds).

20. Shrug your shoulders again and move them around, move them up, forward, backward.....feel the tension in your upper back (about 10 seconds).

21. Drop your shoulders once more and relax.....let the relaxation spread deep into shoulders, back muscles, relax your neck and throat and your jaws and other facial areas. Pure relaxation takes over and grows deeper.....deeper and over deeper (about 20 seconds).
Relaxation of Chest, Stomach and Lowerback:

1. Relax your entire body to the best of your ability.

2. Breathe freely and easily in and out.....notice the relaxation while you exhale.....feel the relaxation.

3. Now breathe right in and fill your lungs.....inhale deeply and hold your breath.....study the tension (about 10 seconds).

4. Now exhale.....chest grows loose and push the air automatically. continue relaxing and breathe freely and gently ...feel the relaxation and enjoy it (about 20 seconds).

5. Rest of your body be relaxed. fill in your lungs again, breathe deeply and hold it.

6. Breathe out and appreciate the relief. breathe normally.....continue relaxing your chest.....spread the relaxation to your back, shoulders, neck and arms.....enjoy the relaxation.

7. Now abdominal muscles.....stomach area, tighten your stomach muscles.....by pushing it out make your abdomen hard.....notice the tension (about 10 seconds).

8. Relax.....let the muscles loose.....notice the contrast (about 20 seconds).

9. Once more press your stomach muscles...hold the tension and study it.

10. Relax.....notice the well-being that comes with relaxation.

11. Draw your stomach in....pull the muscles right in and feel the tension (about 10 seconds).

12. Relax. let your stomach out. continue breathing normally.....feel the gentle massaging action all over chest and stomach (about 20 seconds).

13. Relax your stomach fully.....relax when you breathe out and notice the rhythmic relaxation in lungs and stomach.
14. Lower back.....arch up your back, make it quite hollow, feel the tension along your spine (about 10 seconds).

15. Settle down comfortably and relax (about 20 seconds).

16. Just arch your back up and feel the tension.....rest of the body be relaxed.....try to localize the relaxation in your lower back area.

17. Relax once more, relax further and further.....relax lowerback, upper back, spread to stomach, chest, shoulders, arms and facial area. These parts relax further and further and deeper.

Relaxation of Hips, Thighs and Calves followed by complete Body Relaxation:

1. Let go of all the tension and relax

2. Now flex your buttocks and thighs.....by pressing down your heels as low as you can (about 10 seconds).

3. Relax and note the difference (about 20 seconds).

4. Once again flex your thigh muscles, hold the tension.

5. Relax your hips and thighs.....relaxation proceeds.

6. Press your feet and toes downward away from your face so that the calf muscles become tense.....study the tension (about 10 seconds).

7. Relax your feet and calf muscles (about 20 seconds).

8. Bend your feet towards your face, so that you feel the tension along your shins ..... (about 10 seconds).

9. Relax again.....relax for a while.....relax your feet ankles, calves, shins, knees, thighs, buttocks, and hips. Feel the heaviness, when you relax further. Spread the relaxation to stomach, waist and lower back. Let go more and more, relax all over.
Let it proceed to your upper back, chest, shoulders and arms right to the tips and
fingers.....keep relaxing neck and jaws and all your facial muscles, keep relaxing for a while. relax (about 25 to 30 seconds).

10. Keep your eyes closed.....prevent any surface tension from developing, breathe in deeply and feel yourself becoming heavier. Take a long breath and let it out slowly. Feel how heavy and relaxed you have become.

11. Relax.....not even a single muscle should move.....think of your effort that is required to raise your right arm. As you think, notice the tension in your shoulder and right arm.

12. Now decide not to lift.....relax.....observe the relief and disappearance of tension.

13. Carry on relaxing like that.....when you want to get up, count backwards from 5 to 1.....you should then feel fine and refreshed. wide awake and calm.

14. If you want to sleep, just relax and sleep.

Each of these 10 subjects in experimental group II was asked to practise the deep muscle relaxation based on Jacobson’s principles twice a day. once in the morning soon after bath and once in the night before going to sleep.

Totally the number of hours spent for Jacobson’s Deep Muscle Relaxation intervention was as follows '  

10 Patients x 1 hr/day x 30 days = 300 hrs.

As mentioned in the experimental design, the subjects in control group neither received the training in deep muscle relaxation nor any other training for enhancement of well-being.

Data were collected from the respondents as indicated in the research designs and the data were analysed by employing multivariate and univariate statistics details of which are presented and discussed in the next chapter.