CHAPTER-III: Methods And Procedure

CHAPTER-III

METHODS AND PROCEDURE

In this chapter, the procedures to be adopted for the selection of subjects, design of the selection of variables, training program, orientation of the subjects, criterion measures, reliability of data, collection of data and statistical procedures that are required to analyze the data will be discussed.

DESIGN OF THE STUDY

The present study was conducted on 45 hypertensive female patients having mild to moderate hypertension i.e. below 160/94 and having age group between the age group of 40-65 yrs and not currently taking any anti-hypertensive medications. Participants were assigned to the three groups, each group comprising of 15 subjects each. Measurement of the variables were taken at the beginning of experimental training session over a period of seven days and the mean of these variables were recorded as pre-trial records. Similarly at the end of experimental training session, average of same variables were taken again and recorded as post trial records as mentioned in table-I.

SELECTION OF SUBJECTS

The subjects were selected from the Sarvodya Bhawan Jalandhar considering their willingness and feasibility to undergo the trial and their faith and positive attitude towards the Yoga and Naturopathy. For the purposive sampling, all the subjects were given a set of questionnaire (Appendix No.4). The information so collected was then applied onto the Inclusion/Exclusion Flow chart (Fig. 5) for every subject separately and the most suitable candidates, fulfilling all the inclusion criteria were considered and included in the Study as subjects i.e. subjects having age group between 45-60 years, blood pressure up to 160/94 and not taking any medicine.

These subjects then were divided into three groups, One Control (15 subjects) and Two Experimental Groups (15 subjects each). The Experimental group was further sub-divided into two groups of 15 subjects in each group. Group I was given (Yoga Group) and Group II (Diet Modification group).
Subjects (45)

Experimental Group (30)  Control Group (15)

Yoga (15)  Diet (15)

During trial the Group-I and Group-II subjects were delivered yoga and naturopathic practices for B.P control. The 8 week yoga and dietary programs included information and group support in learning yogic health-related factors, including stress reduction techniques. The subjects were explained the purpose of the trial and the way of executing the trial by demonstrating the Yogic Asanas and Pranayama. They were also explained the importance and role of diet in controlling the blood pressure.

Training sessions for Yogic Asanas were given to group I, and diet alteration was recommended to group II as mentioned in Table-II and III respectively.

The controlled groups were not allowed to participate in any of the training and dietary modification programs.
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Fig. 5 Flow chart for the Subjects Exclusion /Inclusion Criteria

SELECTION OF THE VARIABLES

In consultation with experts of the field, reviewing the literature and considering the feasibility specially from the point of view of availability equipments and time factor; the following variable are selected for the study:-

1. Systolic Blood pressure
2. Diastolic Blood pressure
3. Body Weight
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ARMAMENTARIUM

Electronic Weighing Machine

Sphygmomanometer

Stethoscope

Fig.6 Monitoring the Blood Pressure with the help of sphygmomanometer apparatus.

Fig.7 Electronic Weighing Machine
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TRAINING PROGRAMME

The Yogic session were conducted at a peaceful place where no distraction or disturbances occurred. Before starting the trial the existing blood pressure of all the subject will be recorded on average basis for 7 days as mentioned in table-I.

The Yogic session were scheduled from 6.00 a.m. to 7.00 a.m. and 6.00 p.m. to 7.00 p.m. per day for six days for experimental group-I and dietary modification will be recommended to group-II and were motivated and asked for to follow the dietary recommendations strictly. Control group continued their own life style and dietary habits as usual.

The final post trial records were taken at the end of eight weeks for all the groups. BP was measured in the sitting position using the subject's left arm, with the sphygmomanometer monitor has been validated in subject. The subjects were introduced to the monitor, and were sitting quietly resting by themselves at least 5 min before the measurements were made. The BPs was taken using a standard pressure cuff. The width of the cuff was at least 40% of the circumference of the upper arm, and the cuff was long enough to encircle the upper arm completely with or without overlap.
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**TABLE: - I (a)**

**BLOOD PRESSURE RECORDS**

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Mean Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
</tr>
<tr>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
</tr>
<tr>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
</tr>
<tr>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
<td>D.P.</td>
<td>S.P.</td>
</tr>
</tbody>
</table>

SP-Systolic Pressure  
D.P- Diastolic Pressure

**TABLE: - I (b)**

**BODY MASS INDEX RECORDS**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Patient name</th>
<th>Height (mtrs.)</th>
<th>Weight (kg.)</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE-II

**YOGIC TRAINING PROGRAMME**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>06:00am-06:10am</td>
<td>Om chanting, Anuloma viloma pranayama</td>
<td>Om chanting, Anuloma viloma pranayama</td>
<td>Om chanting, Anuloma viloma pranayama</td>
<td>Om chanting, Anuloma viloma pranayama</td>
<td>Om chanting, Anuloma viloma pranayama</td>
<td>Om chanting, Anuloma viloma pranayama</td>
</tr>
<tr>
<td>06:10am-06:20am</td>
<td>Sukhasana, Gomukhasana</td>
<td>Nadi Shodan Pranayama, Bhramari Pranayam</td>
<td>Shectali Pranayama, Sheetkari Pranayama</td>
<td>Bhramari Pranayama, Sheetkari Pranayama</td>
<td>Shitali Pranayama, Sheetkari Pranayama</td>
<td>Bhramari Pranayama, Sheetkari Pranayama</td>
</tr>
<tr>
<td>06:20am-06:30am</td>
<td>Vajrasana, Ushtrasana</td>
<td>Shavasana, Vastrasana</td>
<td>Vajrasana, Shavasana</td>
<td>Sukhasana, Padmaasana</td>
<td>Sukhasana, Ushtrasana</td>
<td>Sukhasana, Ushtrasana</td>
</tr>
<tr>
<td>06:30am-06:40am</td>
<td>Bhujanasana, Bidalasana</td>
<td>Pavannuktasana, Bhujangason</td>
<td>Ardhamatsyendrasana, Bidalasana</td>
<td>Ushtasana, Bhujanrasana</td>
<td>Ardhamatsyendrasana, Bidalasana</td>
<td>Bhujangason, Ardhamatsyandrasana</td>
</tr>
<tr>
<td>06:40am-06:50am</td>
<td>Shavasana, Pavannuktasana</td>
<td>Shavasana, Trikonasana</td>
<td>Ushtrasana, Trikonasana</td>
<td>Pavannuktasana, Shavasana</td>
<td>Trikonasana, Ushtrasana</td>
<td>Bidalasana, Vajrasana,</td>
</tr>
<tr>
<td>06:50am-07:00am</td>
<td>Pran Mudra, Gyan Mudra</td>
<td>Dot Trataka</td>
<td>Hridya Mudra</td>
<td>Yoga Nidra</td>
<td>Yoga Nidra</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** All the asanas will be stretched over a period of 5 minutes each that will include 60 seconds for yogic postures and rest of the time for relaxative postures.

**Note 2:** There shall be standard increase in duration of pranayama at the rate of two minutes per week per pranayama.
YOGIC ASANAS SELECTED FOR YOGIC TRAINING PROGRAMME

Shavasana

Lie down on the back. Stretch both legs. The heels should be 12 to 20 in apart and the feet should be at the sides. Eyes and lips should be gently closed. Out breath from mouth and bring the stomach inward. Do this three times. Then all the muscles, beginning from feet to head, to relax. Breathing should be normal as one practice of Asana, it can also be done while standing or lying on left or right side.

Sukhasana

Sit down on the floor or a Yoga Mat. Cross your legs, placing your feet behind your knees. Clasp your hands around your knees. Keep your body and head straight.
Bhujangasana

Lie with face down on the mat on the ground. Relax the body. The legs should touch each other and the soles of the feet should face upward. The knees and thighs should touch the ground. Place the palms on the ground near the shoulders. Now raise the chin and bring the head backwards. Take breath and withhold it. Now raise the head and chest. The body up to the navel should be raised. The weight of the raised portion of the body is on the palms. Remain in this position for a while. Slowly bring the body to the original position while breathing out.
Vajrasana

Sit with legs stretched in front. Bend left foot and bring it close to thigh. With the help of left foot under the left buttock. The knee would be touching the ground, the heel would be touching the body and the sole would be facing upward. Similarly place the right foot under the right buttock. Both knees will touch each other while feet would be separated. Now place both hands on the knees. The back should be straight and one should look straight. This is vajra asana.

![Vajrasana Image]

Padmasana

Put left foot on right thigh and right foot on left thigh in such a way the heel would touch the stomach. Both thighs and knees should touch the ground, back should be completely straight and the chin should touch the throat. Now focus on the eyes on the tip of the nose. This is Padmasan.

Trikonasana

Stand straight, feet more than shoulder width apart and arms on the sides. Palms facing and touching the thighs. While inhaling, raise your right arm slowly to shoulder level, palm facing down with the elbow straight. Now turn the palm upwards and raise the hand so that it is in a straight line, touching the ear. While exhaling, bend as far as possible to the left. This is the final position.
Trikonasana. Maintain it for a few seconds and return to normal position gradually. The same is to be done on the other side. This completes the process. The lateral stretch should be felt.

Ushtrasana

Sit with legs stretched in front. Bend left foot and bring it close to thigh. With the help of left foot under the left buttock. The knee would be touching the ground, the heel would be touching the body and the sole would be facing upward. Similarly, place the right foot under the right buttock. Both knees will touch each other while the feet would be separated. While breathing in hold the heels with both hands. Bend the neck towards feet.
**Vakrasana**

Sit straight with both legs extended. Bend the right knee perpendicularly; right toe should be straight to the left leg knee. Now, gently place your right hand on the back side. Fingers should be flattened and straight. Now by twisting the body slightly touch the left leg phalanges by your hand. Bend your body slightly to the side. Gaze with your eyes straight. You should practice vice versa with another leg. Completing one round. While turning your body to the left or right, you should exhale. Then, the breathing should be normal. In final stage, retain breath for time and then relax.

![Image of Vakrasana](image-url)

**Gomukhasana**

Sit on the mat spread on the ground. Bend the left leg and keep it near the buttock in such a way that the heel touches the buttock. Now bring the right foot near the left foot and bend it. The right knee would be above the left knee. Keep the body straight. Bend the right arm behind the back while lifting it above the shoulder. Now bring the left hand behind the back above the waist. The fingers of both hands meet and would be held together. The same posture should be adopted on the other side.
Ardh Matsyendrasana

Sit on the ground and fold the left leg. The heel would be near the anus. Then lift the right foot and place it on the left side of the left leg so that it is touching the left knee. Now bring the left hand around the knee of the right leg and hold the toe of the right foot. Now take the right arm behind the back and turn the head on the right side. This is Ardh Matsyendrasana. The similar posture should be adopted with the other leg.

Bidalasana

Start on your hands and knees. Position your hands directly beneath your shoulders and your knees directly beneath the hips. Have your fingers of hands fully spread with the middle fingers pointing straight ahead. Make your back horizontal and flat. Gaze at the floor. This is your "neutral" positioning. When your pelvis is in neutral, your spine will be at full extension, with both the front and back sides equally long.

Pawanmuktasana

Lie down on the back. Both legs should be straight. Grasp both hands so the fingers are between one another. Then bring the knees with both hands till they touch.
the nose. Take out breath while doing so. Remain in this position as long as:
Go back to the original position while taking breath.

YOGIC PRANAYAMA SELECTED FOR YOGIC TRAINING PROGRAM

Nadi Shodhana Pranayama

Sit in the Padmasana pose. Close the eyes. Join the index finger and
finger of right hand, and join the ring finger and small finger. Keep th
separate. Put the thumb on right nostril and breathe out from left nostril. Nov
in from left nostril and close the left nostril with ring finger and small finge
the inner. Now remove the right thumb and slowly release breath. After a few
do the outer Kumbhak. Now inhale from the right nostril and close the nostr
inner Kumbhak. Then slowly exhale. The ratio of poorak, kumbhak and rech
be 1:4:2.

Anuloma Viloma

Anuloma Viloma is also called the Alternate Nostril Breathing Tech.
this Breathing Technique, inhale through one nostril, retain the breath, an
through the other nostril in a ratio of 2:8:4.
### Sitali Pranayama

Sit in Padmasana and sukhasana. Keep the chin four fingers upward. Bring tongue in the shape of a tube. Inhale through the tongue. Hold the breath for some time. Now close the mouth and exhale through the nose.

### Sheetkari Pranayama

Sit in Padmasana. Bring the tongue upward and turn it toward throat. Inhale through teeth, then hold the breath and exhale through nose.
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Bhramari Pranayama

Sit in Padmasana or Sukhasana. Put the upper two fingers of both hands on the forehead. With the third finger gently press the nose. The rest of the fingers should be put on the lips. Now inhale through the nose. For a few seconds do inner Kumbhaka. Now exhale through nose making the sound of a drone. Do this 4 to 5 times. This sound creates vibrations which pacify the brain and the nervous system.
TABLE-III

DIETARY MANAGEMENT

<table>
<thead>
<tr>
<th>Time</th>
<th>Meal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:00AM</td>
<td>1 lemon + 1 glass of enzymatic water (wheat grass water) 24 hours before overnight soaked water (1:4) + 2 spoon of honey.</td>
</tr>
<tr>
<td>6:00AM</td>
<td>4 Onion + 4 Garlic juice + 2 spoons of honey.</td>
</tr>
<tr>
<td>9:30AM</td>
<td>6 Amla juice + Glass of raw vegetable juice of seasonal Carrot, Cucumber, Tomato, Lauki, beetroot, Kakdi etc.</td>
</tr>
<tr>
<td>12:30PM</td>
<td>Butter milk 1 glass + Soyabean milk.(200 to 400ml)</td>
</tr>
<tr>
<td>2:30PM</td>
<td>Seasonal Orange, Grapes, Melon etc. Juicy and Seasonal Fruits eg., Pear, Guava, Chikoo, Jamun, Rasbhari, Water Melon, Mausami, Apple, Banana etc. 200 to 500gms</td>
</tr>
<tr>
<td>4:30PM</td>
<td>1 Glass of seasonal Vegetables soup.</td>
</tr>
<tr>
<td>7:00PM</td>
<td>Salad-1 plate, chapatti-2 (50gm.multi grain atta) or rice 50gm.(Raw weight), skim curd-1cup, dal cooked-1 katori, green vegetable boiled.</td>
</tr>
<tr>
<td>8:30PM</td>
<td>A spoon of Trifla powder with a glass of warm water.</td>
</tr>
</tbody>
</table>

Recommended by Dr. Dev Raj Tyagi, NDDY, Doctor Incharge

ORIENTATION OF THE SUBJECTS

Before training, subjects were oriented the purpose of the study and the importance of training programme. The techniques of performing the Yogic asanas were explained to the subjects by the means of demonstration and instructions by the investigator in order to handle them and get their full co-operation. They were motivated to strictly follow the dietary recommendations so as to ensure reliable data. The investigator with the help of assistant measured and recorded all the variables,
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both pre and post trial. The Doctors of Sarvodya Bhawan, Jalandhar who were well versed with the training program helped the investigator all through the experimental period.

COLLECTION OF DATA

The data has been collected from the middle-aged female patients of Sarvodhya Bhawan, Naturopathy and Yoga Center, Jalandhar. The procedure of data collection as divided into two steps: Pre-testing and Post- testing records were collected. The data so collected from two groups on selected variables was used for statistical analysis to find out whether there was any significant reduction in blood pressure between the pre, mid and post trial measures and thus Paired t – test was applied.

STATISTICAL PROCEDURE

The data obtained was compiled and tabulated variables –wise. Paired t-test was used to identify any significant difference between the pre-tests and post-tests means of all the groups for the dependent variables. At the initial stage the values of means and standard deviations and t-ratios of the variables are computed to know the level of significance between pre-test and post-test mean scores of all the groups of middle-aged female patient’s sample.

Analysis of Covariance (ANCOVA) was applied to know the significance of difference among various groups against each variable and where the difference were found significant at 0.05 level of confidence, the Scheffe’s post hoc test was applied to know the direction of differences.