Efficacy of Mrudu Samvahana (Forehead Massage) over Takra Dhara (Buttermilk Dripping Therapy) in Anxiety and Stress Induced Essential Hypertension – A Randomized Clinical Trial.

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Abstract: Blood pressure level measuring above 140/90 mm of Hg is termed as hypertension. Hypertension is associated with various risk factors and also is mainly responsible for mortality in industrialized countries. The treatment for hypertension in modern science is palliative in nature. Many of these, along with its effectiveness in controlling the blood pressure, cause adverse side effects; hence the need for an alternate therapy with no potential side effects. Ayurveda has potential medicines to alleviate hypertension without causing any side effects. The study was to evaluate clinical efficacy of two Ayurveda procedures Mrudu Samvahana and Takradhara in essential hypertension. The study included a total of 40 patients, attending the Outpatient department of KLE Ayurveda hospital, randomized into Group A and Group B of 20 each. The patients in group A received Mrudu samvahana with Murchita tila taila which was performed 20 minutes per day for 7 days. The patients in group B received Takradhara with Amalaki siddha takra which was performed 40 minutes per day for 7 days. Statistical analysis revealed that both groups Mrudu Samvahana and Takradhara showed significant (P<0.0001) results determined by unpaired T test in objective parameters. Between the group assessment revealed that Takradhara has shown better results compared to mrudu samvahana in reduction of systolic and diastolic blood pressure (P<0.0048).

Keywords: Ayurveda, Essential hypertension, Mrudu Samvahana, Panchakarma Takradhara
1. INTRODUCTION

Persistent high blood pressure in systemic arteries is called as arterial hypertension. Blood pressure is expressed as ratio of systolic blood pressure (The pressure exerted by blood on walls of arteries when the heart contracts) to diastolic blood pressure (The pressure exerted by blood on walls of arteries when the heart relaxes). The Blood pressure level measuring above 140/90 mm of Hg is termed as arterial hypertension.\(^1\) Several etiological factors play important role in the pathophysiology of hypertension with multifactorial gene environment interplay. The mechanisms of hypertension includes salt absorption leading to volume expansion, impaired response to renin angiotension – aldosterone system, increased sympathetic tone leading to increased peripheral resistance and increased afterload leading to development of hypertension.\(^19\) In the year 2000, 26.4% of the overall adult population had hypertension and by the year 2025, 29.2% were projected to have this condition.\(^2\) Essential or idiopathic hypertension is a form of hypertension which has no identifiable cause. It affects 95% of the hypertensive patients.\(^3\) The World Health Organization reports that suboptimal BP (>115 mm Hg SBP) is responsible for 62% of cerebrovascular disease and 49% of ischemic heart disease, with little variation by sex. In addition, suboptimal blood pressure is the number one attributable risk for death throughout the world.\(^1\)

<table>
<thead>
<tr>
<th>Classification</th>
<th>SBP  (mmHg)</th>
<th>DBP  (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120–139</td>
<td>80–89</td>
</tr>
<tr>
<td>Stage 1 Hypertension</td>
<td>140–159</td>
<td>90–99</td>
</tr>
<tr>
<td>Stage 2 Hypertension</td>
<td>≥160</td>
<td>≥100</td>
</tr>
</tbody>
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\(SBP - \) systolic blood pressure; 
\(DBP - \) diastolic blood pressure

According to Ayurveda, Aacharya Charaka explains that if we come across a set of symptoms which have not been clubbed under one heading, the physician has to analyze the symptoms and understand the possible pathogenesis in terms of involving factors like Dosha (Bio humours), dushya (Pathological entities), dhatu (Body tissues).\(^4\) Various luminaries have tried to coin a name to the disease Hypertension viz- Raktachapa, Raktavata, Dhamani pratichaya, Raktagatavata, and Dhamaniprapurana and many others. Most of the disease entities are not in whole but collectively are the most probable routes of pathophysiology of hypertension according to the Ayurveda. The etiological factors and pathology of Essential Hypertension also have been widely studied; The dietary factors such as westernization, stress, anxiety \(^5,6\) and mutations are also considered in this regard. When we go through the pathophysiology of essential hypertension, it involves, prana vayu, vyana vayu, sadhaka pitta, rasa dhatu, raka dhatu and manas. Although modern pharmacological treatments are effective in controlling the blood pressure, they have adverse side effects such as excessive micturition, dry cough, dizziness depending on the group of drug prescribed, caused by exaggerated therapeutic effect, non - therapeutic pharmacological effect or non - therapeutic non - pharmacological effect.\(^7\) Non pharmacological alternative therapies would be of great help in this regard. Non pharmacological management including lifestyle modifications can account for upto 15% reduction in cardiovascular related events.\(^19\) Also non pharmacological interventions help to reduce daily doses of antihypertensive and delay progression from the stage of prehypertension to further stages of hypertension.\(^20\) In the present study, two non-pharmacological interventions – Mrudu Samvahana and Shirodhara have been selected in the management of hypertension. Shirodhara has been explained in the category of Murdhitalia procedures ie procedures performed on head.\(^8\) Takradhara is a type of shirodhara in which medicated buttermilk is poured on forehead, when the patient lies on supine position. The procedure is carried out with the help of a specialized instrument called Dhaara Paatra. The patient is made to lie in supine position and the Dhaara Paatra is positioned, so that it is around four inches above the forehead. The instrument is filled with warm buttermilk and dropped as a stream on the forehead of the patient. The buttermilk is collected in a vessel and reheated on a waterbath and then refilled in Dhaara Patra and the procedure is repeated.\(^10,11\) It has been effective in reducing anxiety and stress and also proved beneficial in essential hypertension.\(^8\) The properties of Takradhara (buttermilk dripping therapy) being; it alleviates mental stress, headache, insomnia, balances the bioenergies, hrudaya raju (chest discomfort) corrects ojakshaya (enhances vigor), and improves digestion.\(^11\) Due to these effects it was preferred as the control in the present study. Another procedure explained in the Ayurvedic classics with similar properties is Samvahana, described with the properties of inducing Sukha (Comfort), Nidra (sleep), Vrushya (aphrodisiac), reduces Klama (fatigue) and does Twacha Rakta and Mamsa Prasaadana (improves quality of skin, circulation and muscle) and Vata Shaman (Pacifics bio humour Vata). It has been explained as a modality of treatment for the symptoms produced due to suppression of sleep.\(^21,22\) The procedure being explained as Sukha Sparsha Mardana (gentle and comforting massage)\(^21\). In the present study Mrudu samvahana (Rhythmic forehead massage) was performed in the Shirah predesha i.e on the forehead of the patient. The procedure was performed with patient lying comfortably in supine position as in that of Shirodhara. Also in the present study, an attempt was made to find out the effect of Mrudu samvahana (Rhythmic forehead massage) in comparison with that of Takradhara.

2. MATERIALS AND METHODS

The study was approved by the Institutional Ethics Committee bearing Ref no ID BMK/PG/11/10. A total number of 40 patients of either sex with prehypertension (SBP 120-139mm of Hg, or DBP 80-89 mm of Hg) or stage 1 hypertension (SBP 140-159mm of Hg, or DBP 90-89 mm of Hg) were selected from outpatient department of KLE Ayurveda hospital.
2.1 Inclusion Criteria
1. Patients with Prehypertension
2. Patients with Stage I hypertension

2.2 Exclusion criteria
1. Patients with stage II hypertension
2. Malignant hypertension
3. Patients with severe debilitating illness
4. Patients unfit for therapies

The sample size was calculated from the prevalence and number of patients visiting KLE Ayurveda Hospital in the last two years. Patient written informed consent was taken prior to enrolment, and were randomly divided into two (A and B) groups of 20 each. Patients of group A, were treated by Mrudu samvahana i.e. gentle rhythmic massage over forehead by using Murchita tila taila (sesame oil processed with herbs) for 20 min per day for 7 days. Patients of group B were treated with Takradhara procedure for 40 minutes per day for 7 days. Timings of the therapy were scheduled between 9.00am-11.am and were performed by trained male and female Panchakarma therapist in male and female subjects respectively. Follow up assessment of parameters was done on the 15th day. Intervention is for only 7 days that is

Intervention – 0th to 7th day
0th day – 1st assessment
7th day – 2nd assessment
15th day – 3rd assessment (1st follow-up)

3. STATISTICAL ANALYSIS
Paired and unpaired student “t” test, Wilcoxon matched-pairs signed rank test and Mann Whitney tests were applied. Among which for objective parameter, Systolic Blood pressure, Diastolic Blood Pressure, Oxygen saturation and Pulse rate Paired and Unpaired t test were applied, and for subjective parameters like Shrama, Krodha prachurata, Tamo darshana, Bhrama and Shira shoola Wilcoxon matched-pairs signed rank test was applied and for Insomnia grading Mann Whitney tests was applied.

3.1 Assessment criteria
Blood pressure was recorded 5 minutes before the procedure, during the procedure, five minutes after the procedure and during the follow up. Oxygen Saturation was recorded five minutes before the procedure, during the procedure, five minutes after the procedure and during the follow up. Insomnia was assessed using Bergen insomnia scale before the treatment, after the treatment course that is on 7th day and during the follow up on 15th day.

4. RESULTS
Before treatment, group A (Mrudu Samvahana) has the mean systolic blood pressure was 145.3 mmHg and after the treatment it was reduced to 123.1 mmHg. The relief was statistically significant with p value (<0.001). However, during the follow up on 7th day it was increased to 134.9 mmHg but when compared to day 1 the difference was significant at (p < 0.0001). Mean of diastolic blood pressure before treatment was 92.7 mmHg and after the treatment it was reduced to 81 mmHg. The effect of the therapy was statistically significant at P <0.0001, during the follow up study it was increased to 84.7 mmHg, and was significant at (p < 0.0001) when compared to day 1 as shown in Figure 1.

In Group B (Takradhara), the mean of systolic blood pressure before the treatment was 149 which was reduced to 119.6 after the treatment. The effect of the therapy was statistically significant at P <0.0001, however during the follow up it was increased to 136.35 and was significant at (p < 0.0001) when compared to day 1. The mean of diastolic blood pressure before the treatment was 93.2 which was reduced to 77.9 after the treatment. The effect of the therapy was statistically significant at P <0.0001, during the follow up though it was increased to 84.5 and was significant at p < 0.0001, when compared to day 1 as shown in Figure 2.
The values are expressed in Mean

**Fig 2: Effect of Takradhara on objective parameters**

In group A, 4 patients were suffering from insomnia. On the 7th day, there was 100% relief and, on the 14th day, the symptom relapsed in 1 patient. In group B, 2 patients were suffering from insomnia. On the 7th day there was 100% relief, there was no relapse on the 14th day. There was a significant change in the systolic and diastolic BP (P<0.05) in both the groups. However, there was 19.7% reduction in systolic BP in group B when compared to 15.27% reduction in group A, and 16.41% reduction in diastolic BP in group B in comparison to 12.62% reduction in group A.

**Fig 3: In-between the group effect of M. Samvahana and Takradhara on objective parameters**

The mean of systolic blood pressure in Group A (Mrudu samvahana) was 145.3 and after the treatment it was reduced to 123.1. The relief was statistically significant, however during the follow up though it was increased to 134.9 and, was significant (p < 0.0001) when compared to day 1. Mean of diastolic blood pressure, before treatment was 92.7 and after the treatment it was reduced to 81. The relief was statistically significant at P <0.0001. During the follow up it was increased to 84.7, and was significant (p < 0.0001) when compared to day 1. The mean of O₂ Saturation on day 1, was 95.75 and after the treatment, on day 7 it was increased to 96.85. The increase was statistically significant at (P <0.0001). However during the follow up, it was decreased to 95.8 was significant at (p >0.9999) when compared to day 1.The mean of pulse rate on day 1 was 71.2 and after the treatment, on day 7 it was reduced to 65.7. The relief was statistically significant at (P <0.0001), however during the follow up, it was increased to 70.7, and was insignificant (p =0.6848) when compared to day 1.

**5. DISCUSSION**

According to Ayurveda, the shiraha pradesha (Head) is the seat of Mana (Mind), prana vayu. Also head is called as Uttamanga (Precious part of the body) due to the presence of vital organs. Hence a set of treatments performed on the head called the Murdhnitaila were explained in Ayurveda literature. These are four in number viz Shiro abhyanga (Head massage), Shiro Dhaara (Oil dripping therapy), Shiro pichu (Placing of oil soaked cotton on head) and Shiro basti (Retention of oil on head). Among these Shiro dhara is also performed using different media other than oil like buttermilk, decoction, milk, etc. Previous studies have shown that Shiro dhara is effective in management of attention deficit hyperactivity disorder in children, Hypertension, Menopause, Cerebellar ataxia, generalized anxiety disorder, chronic headache and insomnia. Along with Prana vayu, vyana vayu (Types of bio energies) is also present in head as it is sarva deha chara (Moving throughout the body). Manasika bhavas such as chinta, bhaya shoka, lead to vitiation of both manas and vata which may lead to the pathological process of hypertension. Sympathetic hyperactivity and parasympathetic withdrawal is a cause for hypertension, which leads to reset of baroreflex sensitivity and chemoreflex induced hyperventilation. In the present study Amalaki siddha takra was used, and the procedure and was performed for 40 minutes. In shirodhara, due to the continuous pouring of the takra, the intermittent stimulation may provide afferent inputs to the cerebral cortex to produce tranquilizing effect. It induces Altered State of Consciousness (ASC) and act as anxiolytic. This action may stabilize the manasika doshas; raja, tama and prana , vyana vayu by acting on...


10. REFERENCES


