
RESEARCH ARTICLE

Role of homoeopathic intervention in the management of essential hypertension in limbdi based population: An experimental study

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ABSTRACT

High Blood Pressure (BP) is a most important health problem in India and its incidence is rapidly rising among metropolitan and rural populations. It is the mainly significant modifiable risk factor for

cardiovascular, cerebro vascular and renal disease. It's essential to figure out that the Global Burden of Disease (GBD) initiated as a collaborative effort between the World Bank and the World Health Organization (WHO), reported in the year 2010 that high blood pressure ranked as the leading single causation for Global Burden of Disease (GBD).

Key Words: High blood pressure; Systolic blood pressure; Diastolic blood pressure; Homoeopathy

INTRODUCTION

The current clarification of High blood pressure is Systolic Blood Pressure (SBP) values of 130 mmHg or more and/or Diastolic Blood Pressure (DBP) more than 80 mmHg. Hypertension ranks among the mainly common chronic medical situation characterized by a persistent increase in the arterial pressure. Hypertension has been along with the mainly studied topics of the earlier century and has been one of the most important co morbidities contributing to the progress of stroke, myocardial infarction, heart failure, and renal failure. The meaning and categories of hypertension have been evolving over years, but there is a consensus that constant BP readings of 140/90 mmHg or more should undergo treatment with the usual therapeutic target of 130/80 mmHg or less.

ETIOLOGY

The majority of cases of high blood pressure are idiopathic or unknown cause which is also known as essential hypertension. It has long been recommended that an increase in salt intake increases the risk of developing hypertension. Another the major cause for the progress of essential hypertension is the patient genetic ability to salt

response [1, 2]. In salt sensitive patient about 50 to 60% tendency to development of essential hypertension [3].

Epidemiology

More than one billion adults worldwide have essential hypertension with up to 45% of the adult populace being affected with the disease. The high prevalence of essential hypertension is consistent across all socio-economic and income strata, and the prevalence rises with age accounting for up to 60% of the people above 60 years of age [4].

In the year 2010, the global health survey report was published in *Lancet*, which comprised of patient data from 67 countries, reported essential hypertension as the leading cause of death and disability-adjusted life years globally since the year 1990.

In the United States, essential hypertension is related to death due to cardio vascular related diseases. Than any other modifiable risk factor and is 2nd only to smoking as a preventable cause of death for any reason [5].

Recent estimates have suggested the number of patients with

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hypertension could increase as much as by 15 to 20%, which could reach close to 1.5 billion by 2025 [6].

Stage

Classification and stages according to American College of Cardiology (ACC) guidelines [7]:

- Normal: systolic blood pressure less than 120 and diastolic blood pressure less than 80mmHg;
- Elevated: systolic blood pressure 120 to 129 and diastolic blood pressure less than 80mmHg;
- Stage I Essential hypertension: systolic blood pressure 130 to 139 or diastolic blood pressure 80 to 89mmHg;
- Stage II Essential hypertension: systolic blood pressure greater than or equal to 140 mmHg or greater than or equal to 90 mmHg [8].

Complication

- Coronary heart disease
- Myocardial infarction
- Stroke (CVA), either ischemic or intracerebral hemorrhage
- Hypertensive encephalopathy
- Renal failure, acute versus chronic
- Peripheral arterial disease
- Atrial fibrillation
- Aortic aneurysm
- Death (usually due to coronary heart disease, vascular disease, stroke-related) [9, 10].

MATERIALS and METHODOLOGY

- Mercury sphygmomanometer.
- Weighing machine and stadiometer.
- A case recording proforma was particularly designed to meet the terms of this research work, where blood pressure monitoring could be done effectively using blood pressure tracking log sheet. Regular recording of follow-up condition of patient, degree of improvement was done systematically on case recording proforma.
- Repertorization was done with the help of HOMPAT Zomeo Ultimate.
- For statistical analysis and evaluation of data SPSS software (version 16) was utilized. The protocol adhered to was GCP of India and Helsinki declaration pertaining to human subject.

Study setting

The research study was conducted at the OPD of Limbdi Homoeopathic College & hospital Limbdi campus and Limbdi village/cases referred from different places of Limbdi.

Study population

The population would comprise of the rural and urban areas of Limbdi between 46 years to 60 years (male/female) having Primary Hypertension.

Sample size

Patients between the age group of 40-60 irrespective of gender, locality and socio-economic strata were selected via purposive criterion sampling. India has shown the prevalence of hypertension to be 30% in urban and 10% in rural subjects. The sample size for the proposed study can be calculated as follows

$$\text{Number of cases}(n) = \frac{Z^2 \times P(1-P)}{d^2}$$

Where,

N = Sample size

Z=Z statistic for level of confidence P=Expected Prevalence / Proportion d = Precision

Assuming,

Z=1.96

P=13.5% or 0.135 (here we are assuming the prevalence rate of hypertension to be 13.5%)

D=.05

Substituting in the above formula, we get:

$$n = \frac{(1.96)^2 \times 0.135(1-0.135)}{(0.5)^2}$$

=179.44=180 cases

RESULTS

Study Design- Non randomized, experimental study

In 180 patients suffering with Essential Hypertension there was an encouraging change in the mean Systolic & Diastolic Blood Pressure readings. After three months, mean reduction in Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) was 23.55 mm Hg (95% CI 21.39, 25.71) and 12.46 mm Hg (95% CI 11.64, 13.28) in the subjects who were prescribed medicine on the basis of Constitutional Homoeopathic totality. Simultaneously, mean reduction in SBP and DBP was by 19.34 mm of Hg (95% CI 18.15, 20.53) and 7.6 (6.92, 8.27) mm of Hg in the subjects who were prescribed rare (Organopathic) Homoeopathic medicine based on the pre-conceived totality. Yet again, after five months mean reduction in SBP and DBP was by 36.83 mm of Hg (95% CI 33.8, 40) and 23.39 mm of Hg (95% CI 21.68, 25.07) mm Hg in the subjects who were prescribed remedy on the basis of Constitutional Homoeopathic totality. Concurrently after five months through Organopathic intervention, mean reduction in SBP and DBP was by 21.61 mm of Hg (95% CI 19.63, 23.58) and 12.79 mm of Hg (11.02, 14.54) mm Hg in the subjects who were prescribed rare (Organopathic) Homoeopathic remedies based on the pre-conceived totality. Paired t test was used to compare normally distributed continuous variables from pre- during and post-intervention. Blood Pressure values within the intervention group i.e. Constitutional Homoeopathic intervention and Organopathic intervention were analysed using repeated measures analysis of variance (ANOVA), p<0.05 was considered statistically significant in both the interventions. Repeated measure Anova Multivariate Tests was applied on Systolic Blood Pressure values and Diastolic Blood Pressure values between Constitutional Homoeopathic intervention subjects & Organopathic intervention

subjects. As per Fisher's Test, F value of F=25.342a was seen in Systolic B.P findings between the two interventions, correspondingly, in the Diastolic B.P findings, F value of F=31.851a was observed (Tables 1-6).

TABLE 1
Paired t test between the start and end of the intervention in CHI

| | Paired Differences | | | | | | t | Df | Sig. (2-tailed) |
|----------|-------------------------------------------------------------------------------------|----------------|-----------------|-------------------------------------------|--------|--------|--------|----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | | |
| | | | | Lower | Upper | | | | |
| Paired 1 | systolic blood pressure before treatment - systolic blood pressure after treatment | 36.922 | 14.728 | 1.553 | 33.837 | 40.007 | 23.782 | 89 | 0 |
| Paired 2 | systolic blood pressure before treatment - diastolic blood pressure after treatment | 23.389 | 8.121 | 0.856 | 21.688 | 25.009 | 27.323 | 89 | 0 |

TABLE 2
Repeated measure anova applied on systolic blood pressure in CHI group multivariate tests (repeated measure ANOVAs)

| Effect | Value | F | Hypothesis df1 | Error df2 | Sig. | Partial Eta Squared |
|--------------------|-------|----------------------|----------------|-----------|------|---------------------|
| Pillai's Trace | 0.865 | 2.811E2 ^a | 2 | 88 | 0 | 0.865 |
| Wilks' Lambda | 0.135 | 2.811E2 ^a | 2 | 88 | 0 | 0.865 |
| Hotelling's Trace | 6.39 | 2.811E2 ^a | 2 | 88 | 0 | 0.865 |
| Roy's Largest Root | 6.39 | 2.811E2 ^a | 2 | 88 | 0 | 0.865 |

TABLE 3
Paired t test between start and end of the intervention in

Organopathic Intervention

| | Paired Differences | | | | | | t | Df | Sig. (2-tailed) |
|----------|--------------------------------------------------------------------------------------|----------------|-----------------|-------------------------------------------|--------|--------|--------|----|-----------------|
| | Mean | Std. deviation | Std. Error Mean | 95% Confidence interval of the difference | | | | | |
| | | | | Lower | Upper | | | | |
| Paired 1 | systolic blood pressure before treatment - systolic blood pressure after treatment | 21.611 | 9.432 | 0.994 | 19.636 | 23.587 | 21.737 | 89 | 0 |
| Paired 2 | diastolic blood pressure before treatment - diastolic blood pressure after treatment | 12.789 | 8.405 | 0.886 | 11.029 | 14.549 | 14.435 | 89 | 0 |

TABLE 4
Repeated measure anova applied on systolic blood pressure in organopathic intervention multivariate tests (Repeated measure anova)

| Effect | Value | F | Hypothesis df | Error df | Sig. | Partial eta squared |
|--------------------|-------|----------------------|---------------|----------|------|---------------------|
| Pillai's Trace | 0.903 | 4.090E2 ^a | 2 | 88 | 0 | 0.903 |
| Wilks' Lambda | 0.097 | 4.090E2 ^a | 2 | 88 | 0 | 0.903 |
| Hotelling's Trace | 9.296 | 4.090E2 ^a | 2 | 88 | 0 | 0.903 |
| Roy's Largest Root | 9.296 | 4.090E2 ^a | 2 | 88 | 0 | 0.903 |

Exact statistic; Design: Intercept; Within Subjects Design: time

TABLE 5

Repeated measure annova applied on systolic blood pressure between constitutional homoeopathic intervention & organopathic intervention multivariate tests

| Effect | Value | F | Hypothesis df | Error df | Sig. | Partial Eta Squared | |
|----------------|--------------------|---------------------|---------------------|----------|------|---------------------|-------|
| Pillai's Trace | 0.222 | 25.342 ^a | 1 | 89 | 0 | 0.222 | |
| Wilks' Lambda | 0.778 | 25.342 ^a | 1 | 89 | 0 | 0.222 | |
| Time | Hotelling's Trace | 0.285 | 25.342 ^a | 1 | 89 | 0 | 0.222 |
| | Roy's Largest Root | 0.285 | 25.342 ^a | 1 | 89 | 0 | 0.222 |

Exact statistic; Design: Intercept; Within Subjects Design: time

TABLE 6

Repeated measure anova applied on diastolic blood pressure between constitutional homoeopathic intervention & organopathic intervention multivariate tests

| Effect | Value | F | Hypothesis df | Error df | Sig. | Partial Eta Squared | |
|----------------|--------------------|---------------------|---------------------|----------|------|---------------------|-------|
| Pillai's Trace | 0.264 | 31.851 ^a | 1 | 89 | 0 | 0.264 | |
| Wilks' Lambda | 0.736 | 31.851 ^a | 1 | 89 | 0 | 0.264 | |
| Time | Hotelling's Trace | 0.358 | 31.851 ^a | 1 | 89 | 0 | 0.264 |
| | Roy's Largest Root | 0.358 | 31.851 ^a | 1 | 89 | 0 | 0.264 |

Exact statistic; Design: Intercept; Within Subjects Design: time

DISCUSSION

From Hahnemann's period the therapeutically lineage has been a blend of science, logic and philosophy. Scientific data associated with scope and convenience of Homoeopathic intervention in management of essential hypertension values in cases of essential hypertension and to propagate Homoeopathic intervention as evidence based tool for essential hypertension Optimal Treatment. Fortnightly blood pressure monitoring with change in the baseline score of blood pressure values for pre-during-post treatment analysis was used as an assessment tool to evaluate whether the most important aim was achieved or not and observed outcome were corroborated by applying necessary statistical test viz. standard deviation, standard error of the mean, calculation of the mean, Paired t test and one way ANNOVA was applied to draw logical conclusions. The observed results have been discussed in this section unprejudiced. From the above statistical data it could be clearly interpreted that Homoeopathic intervention causes lowering of the blood pressure values. The fall in the Systolic and Diastolic blood pressure values.

CONCLUSION

On the whole, pronouncement of the study is hopeful and outcome

obtained is in support for the Role of ho Homoeopathic intervention in the management of essential Hypertension. Paired t test results between the start and end of the intervention in Constitutional Homoeopathic intervention subjects and Organopathic intervention subjects showed $p < 0.05$, which reflects statistically significant results in favour of Homoeopathic intervention in management of essential Hypertension. Multivariate analysis via repeated measure ANOVA of SBP and DBP in Constitutional Homoeopathic intervention and Organopathic intervention substantiates the role of Homoeopathic therapeutism in management of Essential Hypertension in Limbdi based population. In both the cases F value was not nearer to 1, thus excluding Null Hypothesis and validating that **Alternative Hypothesis is compatible with observed data.**

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