

Ayurveda herb juices and yoga for blood pressure and pulse rate: a controlled trial

Abstract

Background: increasing hypertension throughout society is increasing health costs. One possible solution, Yoga medicine, is increasingly popular with all strata of society. Here we present a study of methods of Ayurveda and Yoga for blood pressure and pulse rate.

Methods: The study was a three arm controlled trial over ninety days in Bhopal, India of 112 males. Informed consent was given by all participants and Ethical Clearance granted by the Institutional Ethics Committee. The three arms were: Group 1, Ayurveda herbal juices and Yoga; Group 2, Yoga; Group 3, no intervention. Assessments of blood pressure and pulse rate were made every 15 days. Statistical analysis used Excel and Graph Pad. Ayurveda herbal juices consisted of freshly prepared Wheatgrass, Amla, Adusa and Guduchi, totalling 200ml. Fresh sprouted moong beans, chickpeas, fenugreek, and peanuts totalling 100gms were also given daily as a breakfast replacement.

Results: Significant changes in both variable means and variances were observed. Both systolic and diastolic blood pressure reduced significantly for Group 1 and Group 2; but not significantly for Group 3. Pulse rate decreased significantly for Group 1 and Group 2; but not significantly for Group 3.

Discussion: Significant decreases in Standard Deviations over the 3-month intervention mean that both Ayurveda Herbal juices and Yoga, and Yoga alone improve variable regulation: both high and low blood pressure normalize. Modern medicine drives variables in one direction, but here Yoga practice has been observed to normalize them.

Keywords: ayurveda, herbal juices, yoga, hypertension, pulse rate

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Abbreviations: T2DM, type 2 diabetes; NCDs, non-communicable diseases; AYUSH, ayurveda, yoga and naturopathy, unani, siddha and sowaigpa, and homeopathy

Introduction

Metabolic syndrome and related disorders like hypertension and Type 2 Diabetes (T2DM) present health care today with great challenges.¹ Both cardiovascular disease and T2DM cause society costs of untold magnitude in both developed and developing nations, not simply financial burdens, but anxiety and grief to those affected and their families. Epidemiological studies project unsustainable increases in health expenditure.² In India, their increased prevalence causes great concern.³ According to the International Federation of Diabetes India's prevalence of T2DM is 9%;⁴ urban levels are 5%.⁵ Modern medicine is largely to blame for this epidemic. While it benefits conditions requiring intensive care or surgery, and its drugs still cure most infectious diseases, for non-communicable diseases (NCDs) like metabolic syndrome etc. traditional systems seem to perform better. Notably, the AHA has recommended the Transcendental Meditation technique for hypertension.⁶

South Asian countries like India possess excellent systems of traditional medicine such as Ayurveda⁷ and Yoga Medicine,⁸ which national policies are now bringing to bear on the problem of NCDs, simply because health needs of an entire nation cannot be fulfilled by a single system of medicine.⁹ In 2014, the Indian government started a Ministry for AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Sowaigpa, and Homeopathy) including Yoga medicine in order to make treatment of NCD's more effective. Reviews suggest Yoga is efficacious against hypertension.¹⁰

Yoga's medical applications are popular with all ages and strata of society, and research over many years has confirmed their value for

much pathology.¹¹⁻¹³ An issue of Indian Journal of Psychiatry¹⁴ has expounded its benefits for depression,^{15,16} much of which is caused by stress. Various mechanisms have been proposed particularly for schizophrenia^{17,18} suggesting reduction of stress in those benefitted. Appropriate Yoga programs are effective against overweight,¹⁹ a side effect of stress and an important aspect of T2DM and metabolic syndrome. Reviews of Yoga studies of T2DM suggest that its practices can improve blood sugar levels and stabilize the autonomic nervous system;²⁰ and that is a safe and cost-effective modality of treatment without side-effects,²¹ as in the case of hypertension.¹⁰ Yoga is therefore ideal to apply to newly detected cases of elevated blood sugar, where blood pressure may also be a potential problem.

Here we report blood-pressure and pulse rate changes from a controlled trial of Ayurveda herbal juices and Yoga in a prison setting; its 112 participants had been selected for blood sugar levels suggesting risk of diabetes, but many also had elevated blood pressure.

Methods

Participants

Consisted of 112 male prisoners with newly diagnosed elevated blood sugar.

Setting

Bhopal Central Jail; special facilities were made available for Yoga practice.

Study design

A three arm controlled trial of ninety days duration. Informed Consent was given by all participants. Ethical Clearance was granted by the S-VYASA Institutional Ethics Committee.

Table 1 Blood Pressure and Pulse Rate Parameters

Group → Parameter ↓	Group 1: Ayurveda and Yoga		Group 2: Yoga		Group 3 Controls	
	Pre	Post	Pre	Post	Pre	Post
SBP	124.05± 17.61	119.18 (*)± 8.11 [^]	122.27± 3.34	118.51(*)± 7.58***	121.27± 5.47	120.01± 14.91
DBP	79.36± 15.70	77.34± 7.05 [^]	75.82± 14.10	78.38± 4.72 [^]	80.58± 14.84	76.11*± 11.45
Pulse Rate	81.63± 11.58	71.97***± 4.05 [^]	82.29± 10.40	73.48***± 5.40 [^]	76.91± 16.23	78.50± 13.58

This Table presents partial results of a three month study of Yoga and Ayurveda Rasahara (Herbal Juices) in Bhopal Central Jail. Significant changes in mean are symbolized by * p < 0.05, ** p < 0.01, *** p < 0.001. Of particular interest are the standard deviation changes for Groups 1 and 2 for which Fisher's 'F' test mostly yielded p < 0.0001, indicated by [^]

Interventions

The three arms received the following interventions: Group 1, fresh herbal juices and Integrated Approach to Yoga Therapy; Group 2, Integrated Approach to Yoga Therapy; Group 3, no intervention. Fresh herbal juices are well described in Ayurveda texts. However, in this case the same formulation was given to all participants in Group 1, simply based on elevated blood sugar variables. Each of the four herbs used is known to reduce blood sugar effectively: Wheatgrass (*Triticum Aestivum L*) (25gms), Amla (*Emblica Officinalis*) 8gms dried powder soaked for 12hours, Guduchi (*Tinospora Cordifolia*) (15gms stem), and Adusa (*Adhatoda Vasica Nees*) (4gms leaves). 50ml of each juice was combined to give 200ml daily for each Group 1 participant. In addition Group 1 received a breakfast replacement of 100gms of mixed sprouts made up of fresh sprouted moong beans, chickpeas, fenugreek, and peanuts.

Group 1's simplified supplements, with the same dosages being administered to all participants were designed to conform to the requirements of a medical trial, and justified by previous clinical experience and the results obtained (see below). The Yoga intervention consisted of: 60mins supervised practice of: squeezing practices (Sukshma Vyayama), Sun Salutation (Surya Namaskara, 2 rounds), Cyclic Meditation (1 complete cycle) and pranayamas (Anuloma Viloma, 10 rounds, Bhramari, 10 rounds) and vocalisation of 'A', 'U' and 'M', and 'OM' (Nadanusandhana, 2 rounds).

Assessments

SBP, DBP and Pulse Rate were measured every 15days. Statistical analysis used Excel and Graph Pad QuickCalcs.

Results

Results are presented in the Table, where pre and post means and standard deviations of the three variables are given for the three groups.

Discussion

The results reported in the Table are highly significant in that they show consistent narrowing of distributions into the normal range for each variable. While shifts in distribution means towards optimal values confirm previous findings of Yoga for hypertension.¹⁰ The really significant results were not changes in means, but reductions in standard deviation. In all six cases these were p<0.0001, except DBP for Group 2 which was only p<0.0006.

Two main points about these results need emphasis: 1. Study results add weight to research on medical applications of Yoga conducted over the past thirty years,⁸ starting with studies of asthma,¹¹ which have established the efficacy of Yoga for all types of disease.⁸⁻¹⁶ It seems that some participants achieve large benefits, though the average may be rather lower. 2. The reductions of standard deviations (or variances) for blood pressure and pulse rate variables are new, and

indicate that Yoga has an entirely different mode of action from other interventions. Drugs move targeted variables by average amounts in a given direction. Drugs like diuretics, beta blockers or angiotensin receptor blockers can only reduce blood pressure, and should never be given to those with normal or low blood pressure. This study shows that in contrast, for the case of blood pressure and pulse rate, Yoga can narrow the distributions of variables i.e. reduce variances and StDs, shifting both ends of distributions back towards the variable's normal range of values. Yoga practice thus seems to be normalising values of variables, rather than shifting distributions in particular directions. Since elevation in blood pressure can, in general, be attributed to failure in blood pressure regulation, the implication is: Yoga acts by improving regulation.

In the context of diabetes, a link between stress, obesity and metabolic syndrome has been acknowledged;²² stress coupled with diabetes can bring on depression,^{23,24} which increases adverse outcomes for the patient²⁵ probably mediated by stress and stress hormones,²⁶ particularly as depression has itself been found to be a risk factor for diabetes.²⁷ A downward spiral of increasing pathology is created, but yoga studies provide evidence for a means to stop it:¹⁴⁻¹⁶ reducing levels of stress reverses downward trends. It is probable that similar epidemiological patterns of interactions between variables apply to hypertension.

Strengths

The study has reported good changes over the variables measured, and the interventions show promise for further study and assessment on a larger scale.

Weaknesses

The study had a relatively small number of participants, the high level of initial attrition reducing its power. The institutional setting could also be a confounding factor in interpretation.

Further research

The study's promise justifies follow up, especially because Ayurveda and Yoga can reverse imbalances and have the potential to reverse chronic disease. An approach worth further study would be to determine each participant's kind of prameha in detail, and to assess the efficacy of yoga and / or Ayurveda for each.

Conclusion

Reduced variances in Groups 1 and 2 suggest that three months practice of Yoga medicine including strict lifestyle rules of diet and behaviour improves regulation of blood pressure. The study found both that the treatment was effective for treatment of mild hypertension in newly diagnosed cases of type 2 diabetes, but also to be safe for those with low blood pressure. Such treatment represents a cheap alternative to long term prescription of drugs that only palliate the underlying pathology, and has the advantage of benefitting those

with low or normal blood pressure as well. A full scale two arm trial is needed to confirm this finding more rigorously and with more statistical power. Further studies of these modalities of treatment would then be merited, particularly in rural areas.

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Conflicts of interest

Author declares there are no conflicts of interest.

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