

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 200 ml. Fresh sprouted moong beans, chickpeas, fenugreek, and peanuts totalling 100 gms 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

Research article

Volume 4 Issue 3 - 2016

Purnima Datey, Alex Hankey* and HR Nagendra

Department of Yoga & Physical Sciences, Deemed University, India

***Corresponding author:** Alex Hankey, S-VYASA, 19 Gavipuram Circle, Kempe Gowda Nagar, Bangalore 560019, India, Tel: +91 900 800 8789; Email: alexhankey@gmail.com

Received: August 28, 2016 | **Published:** October 05, 2016

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 Ayurveda [7] 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 Psychiatry [14] 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.

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*) (25 gms), Amla (*Emblica Officinalis*) 8 gms dried powder soaked for 12 hours, Guduchi (*Tinospora Cordifolia*) (15 gms stem), and Adusa (*Adhatoda Vasica Nees*) (4 gms leaves). 50 ml of each juice was combined to give 200 ml 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: 60 mins 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 15 days. 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.

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 [^].

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 studies 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 patient [25] 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.

References

1. Zimmet PZ, Magliano DJ, Hermann WH, Shaw JE (2014) Diabetes: a 21st Century Challenge. *The Lancet Diabetes and Endocrinology* 2(1): 56-64.
2. Chen L, Magliano DJ, Zimmet PZ (2012) The worldwide epidemiology of type 2 diabetes mellitus-present and future perspectives. *Nat Rev Endocrinol* 8(4): 228-236.
3. Sadikot SM, Nigam A, Das S, Bajaj S, Zargar AH, et al. (2004) The burden of diabetes and impaired glucose tolerance in India using the WHO 1999 criteria: Prevalence of diabetes in India study (PODIS). *Diabetes Res Clin Pract* 66(3): 301-307.
4. (2013) International Diabetes Federation. Summary Table- IDF Diabetes Atlas. (6th edⁿ). Brussels, Belgium: International Diabetes Federation.
5. Mohan V, Deepa M, Anjana RM, Lanthorn H, Deepa R (2008) Incidence of diabetes and pre-diabetes in a selected urban south Indian population (CUPS-19). *J Assoc Physicians India* 56: 152-157.
6. Brook RD, Appel LJ, Rubenfire M, Ogedegbe G, Bisognano JD, et al. (2013) Beyond medications and diet: alternative approaches to lowering blood pressure: a scientific statement from the American Heart Association. *Hypertension* 61(6): 1360-1383.
7. Hankey A (2005) The scientific value of Ayurveda. *J Altern Complement Med* 11(2): 221-225.
8. Nagendra HR, Nagarathna R (2012) *Yoga for Common Ailments*. Bangalore: Swami Vivekananda Yoga Prakashan.
9. Shankar D (2010) Conceptual framework for new models of integrative medicine *J Ayurveda Integr Med* 1(1): 3-5.
10. Cramer H, Haller H, Lauche R, Steckhan N, Michalsen A, et al. (2014) A systematic review and meta-analysis of yoga for hypertension. *Am J Hypertens* 27(9): 1146-1151.
11. Nagarathna R, Nagendra HR (1985) Yoga for bronchial asthma: a controlled study. *Br Med J* 291(6502): 1077-1079.
12. Chandwani KD, Perkins G, Nagendra HR, Raghuram NV, Nagarathna R, et al. (2014) Randomized, Controlled Trial of Yoga in Women With Breast Cancer Undergoing Radiotherapy. *J Clin Oncol* 32(10):1058-1065.
13. Tekur P, Nagarathna R, Chametcha S, Hankey A, Nagendra HR (2012) A comprehensive yoga programs improves pain, anxiety and depression in chronic low back pain patients more than exercise: an RCT. *Complement Ther Med* 20(3):107-118.
14. Khalsa SB (2013) Yoga for Psychiatry and Mental Health: An Ancient Practice with Modern Relevance. *Indian J Psychiatry* 55(Supple 3): 334-336.
15. Naveen GH, Rao MG, Vishal V, Thirthalli J, Varambally S, et al. (2013) Development and feasibility of yoga therapy module for out-patients with depression in India. *Indian J Psychiatry* 55: 350-356.
16. Gangadhar BN, Naveen GH, Rao MG, Thirthalli J, Varambally S (2013) Positive antidepressant effects of generic yoga in depressive out-patients: A comparative study. *Indian J Psychiatry* 55(3): 369-373.
17. Mehta UM, Keshavan MS, Gangadhar BN (2016) Bridging the schism of schizophrenia through yoga—Review of putative mechanisms. *Internat Rev Psychiat* 28(3): 254-264.
18. Hankey A, Shetkar R (2016) Self-transcending meditation is good

- for mental health: why this should be the case. *Int Rev Psychiatry* 28(3): 236-240.
19. Vaidya ADB (2015) The influence of lifestyles on obesity: The impact of diet, sleep, exercise and Yoga. *J Obes Metabol Res.*, 2(3):133-134.
 20. Innes KE, Selfe TK (2016) Yoga for adults with type 2 diabetes: A systematic review of controlled trials. *J Diabetes Res* 2016: 6979370.
 21. Kumar V, Jagannathan A, Philip M, Thulasi A, Angadi P, et al. (2016) Role of yoga for patients with type II diabetes mellitus: A systematic review and meta-analysis. *Complement Ther Med* 25: 104-12.
 22. Kyrou I, Chrousos GP, Tsigos C Stress (2006) visceral obesity, and metabolic complications. *Ann N Y Acad Sci* 1083: 77-110.
 23. Golden SH (2007) A review of the evidence for a neuroendocrine link between stress, depression and diabetes mellitus. *Curr Diabetes Rev* 3(4): 252-259.
 24. Atlantis E, Fahey P, Foster J (2014) Collaborative care for comorbid depression and diabetes: a systematic review and meta-analysis. *BMJ Open* 4(4): e004706.
 25. Black SA, Markides KS, Ray LA (2003) Depression predicts increased incidence of adverse health outcomes in older Mexican Americans with type 2 diabetes. *Diabetes Care* 26(10): 2822-2828.
 26. McEwen BS (2008) Central effects of stress hormones in health and disease: understanding the protective and damaging effects of stress and stress mediators. *Eur J Pharmacol* 583(2-3): 174-185.
 27. Knol MJ, Twisk JW, Beekman AT, Heine RJ, Snoek FJ, et al. (2006) Depression as a risk factor for the onset of type 2 diabetes mellitus. A meta-analysis. *Diabetologia* 49(5): 837-845.