

RESEARCH AT A GLANCE



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Research at a Glance

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PREFACE

Introduction

The library of the Central Council for Research in Homoeopathy has been circulating "Research at a Glance". The main objective is to disseminate precise information/citation about scientific articles published in various journals/magazine other than the journals subscribed by this Council.

Scope

This volume covers articles on Homeopathy, Ayurveda, Unani, Yoga.

Arrangement of Entries

The articles are indexed under the name of the authors, arranged in alphabetical order. The entries have been made in the following order:

Author

Title

Name of Journal

year of publication; Volume (issue no.): pagination

Abstract

Acknowledgement

We are grateful to Dr. R.K. Manchanda, Director General, CCRH for his encouragement and valuable suggestions from time to time. We sincerely acknowledge the cooperation of Mrs. Nisha Adhikari, DEO in compiling this bulletin.

(Meenakshi Bhatia)
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HOMOEOPATHY

Ahmad S, Rehman T, Abbasi WM. In vivo evaluation of antipyretic effects of some homeopathic ultra-high dilutions on Baker's yeast-induced fever on Similia principle. J Ayurveda Integr Med. 2017 Dec 1. pii: S0975-9476(16)30477-6.

Abstract:

Background: Homeopathy is a controversial alternative system of medicine. The action of homeopathic medicines is considered slow and it is assumed that homeopathic medicines are ineffective in acute conditions such as fever.

Objective: In the present study, effects of 3 homeopathic medicines on baker's yeast induced fever were investigated.

Materials and methods: 42 local strain rabbits were equally divided into 7 groups. Normal saline was orally administered to group 1 (normal control) rabbits without fever induction. Group 2 underwent baker's yeast-induced fever (negative control). Groups 3, 4, 5, 6 and 7 underwent baker's yeast-induced fever and were thereafter treated orally with paracetamol, Nux vomica 200C and 1M, Calcarea phos 200C and Belladonna 200C respectively. Rectal temperature was checked hourly. The abdominal writhing and frequency of loose stools were also monitored. ANOVA was applied for checking statistical significance. $p \leq 0.05$ was considered significant.

Results: The rectal temperature increased significantly ($p < 0.05$) in the negative control group when compared to the normal control. Abdominal writhing and loose stools monitoring showed increased writhing and loose stools frequency of group 2, 3, 6 and 7 rabbits. However, treatment of paracetamol significantly reduced rectal temperature. Group 4 & 5 showed significant reduction of rectal temperature together with abatement of abdominal writhing and loose stools.

Conclusion: N. vomica ultra-high dilutions have normalized rectal temperature and prevented the abdominal writhing and loose stools in baker's yeast-induced fever model of rabbits. It could be due to antidotal activity of N. vomica ultra-high dilutions. Therefore, N. vomica ultra-high dilutions can be useful antipyretic agents and can treat conditions associated with gastrointestinal symptoms. However, fixed conclusion can't be asserted due to caveat of small sample size.

Mahesh S, Mallappa M, Tsintzas D et al. Homeopathic Treatment of Vitiligo: A Report of Fourteen Cases. Am J Case Rep. 2017 Dec 2;18:1276-1283.

Abstract:

BACKGROUND Vitiligo, also known as leukoderma, is an autoimmune skin condition that results in the loss of melanin pigment. Vitiligo is not a rare condition but is difficult to treat and is associated with psychological distress. **CASE REPORT** A series of 14 cases of vitiligo are presented that were treated with individualized homeopathic remedies that were based on plant, animal, or mineral compounds. There were 13 women and one man in the case series, with a mean age 29.8 years, and a mean follow-up from treatment of 58 months. The mean time between the onset of the appearance of vitiligo and the first consultation at our clinic was 96 months. Homeopathic treatment for patients is holistic

and was performed on an individualized basis as described in this case series. Photographic images of the skin are presented before and after treatment. **CONCLUSIONS** In 14 patients with vitiligo treated with individualized homeopathy, the best results were achieved in the patients who were treated in the early stages of the disease. We believe that homeopathy may be effective in the early stages of vitiligo, but large controlled clinical studies are needed in this area.

Rossi EG, Bellandi T, Picchi M et al. Patient Safety in Complementary Medicine through the Application of Clinical Risk Management in the Public Health System. Medicines (Basel). 2017 Dec 16;4(4).

Abstract:

Aim: To develop a systematic approach to detect and prevent clinical risks in complementary medicine (CM) and increase patient safety through the analysis of activities in homeopathy and acupuncture centres in the Tuscan region using a significant event audit (SEA) and failure modes and effects analysis (FMEA).

Methods: SEA is the selected tool for studying adverse events (AE) and detecting the best solutions to prevent future incidents in our Regional Healthcare Service (RHS). This requires the active participation of all the actors and external experts to validate the analysis. FMEA is a proactive risk assessment tool involving the selection of the clinical process, the input of a multidisciplinary group of experts, description of the process, identification of the failure modes (FMs) for each step, estimates of the frequency, severity, and detectability of FMs, calculation of the risk priority number (RPN), and prioritized improvement actions to prevent FMs.

Results: In homeopathy, the greatest risk depends on the decision to switch from allopathic to homeopathic therapy. In acupuncture, major problems can arise, mainly from delayed treatment and from the modalities of needle insertion. **Conclusions:** The combination of SEA and FMEA can reveal potential risks for patients and suggest actions for safer and more reliable services in CM.

AYURVEDA

Agarwal VK, Amresh G, Chandra P. Pharmacodynamic evaluation of self micro-emulsifying formulation of standardized extract of Lagerstroemia speciosa for antidiabetic activity. J Ayurveda Integr Med. 2017 Dec 8

Abstract:

Background: Lagerstroemia speciosa (SEL) leaves are a popular folk medicine for diabetes treatment due to presence of corosolic acid. It has low water solubility resulting poor absorption after oral administration. Self micro-emulsified drug delivery system is the way by which we can improve the oral absorption of drug.

Objective: The objective of this study was to develop the self micro-emulsifying formulation of standardized extract of SEL leaves and evaluate its pharmacodynamic performance for antidiabetic activity.

Materials and methods: The SME formulation was prepared by using sefsol-218 as oil, cremophor-EL as surfactant and transcitol-P as co-surfactant. The ratio of surfactant and co-surfactant was determined by pseudoternary phase diagram. SME formulations were characterized for dilution at different pH, self emulsification, optical clarity, globule size and thermodynamic stability. Pharmacodynamic evaluation of formulations was assessed in Wistar rats by using parameters viz. blood glucose level and serum lipid profile.

Results: SEL loaded SME formulation was successfully developed by using sefsol-218, cremophor-EL and transcitol-P with a droplet size 23.53 nm. Pharmacodynamic results showed a higher reduction in blood glucose by SME formulation than SEL without SMES respectively at 50 mg/kg dose while reduction produced at dose of 100 mg/kg was found significant and better on 15th day of study. The percentage reduction produced by SME formulation on serum lipid profile was also significant and was more prominent than SEL.

Conclusion: This study confirms that the formulation elevates the pharmacodynamic performance of SEL approximately two fold.

Dalla Libera D, Tosto C, Morandi A. Ayurveda: The future in the tradition. J Ayurveda Integr Med. 2017 Dec 6. pii: S0975-9476(17)30321-2

Kannan S, Frenz M. Seeking health under palm trees: Ayurveda in Kerala. Glob Public Health. 2017 Dec 22:1-11.

Abstract:

Movement for healthcare, mostly termed 'medical tourism', has been a sector of enormous potential in South Asia over the past years attracting many international clients. Kerala, a state in southern India, advertises 'Kerala Ayurveda' as one of its particular attractions. The objective of this paper is to study and understand the public health view on movements for healthcare and/or wellness across borders with a particular focus on the quality of treatments offered and on issues of ethics that concern patients from across different countries, but also the providers of Ayurveda treatments. To gain insights into

local perspectives, interviews were conducted with Ayurveda practitioners at Ayurvedaresorts in Kerala, in particular in Kovalam and Varkala, both in Thiruvananthapuram district. The analysis of our interviews shows that - perhaps not surprisingly in a world characterised by global capitalism - marketing plays an important role in attracting clients to resorts. Market considerations led to a transformation of how Ayurveda is presented to potential customers. This in turn has undermined the significance of Ayurveda within the tourism industry of Kerala. Arguably, representatives of the state view this as an opportunity rather than considering the importance of further developing Ayurveda as a medical practice.

Kapare H, Lohidasan S, Sinnathambi A et al. Standardization, chemical profiling, in vitro cytotoxic effects, in vivo anti-carcinogenic potential and biosafety profile of Indian propolis. J Ayurveda Integr Med. 2017 Dec 4. pii: S0975-9476(17)30185-7.

Abstract:

Background: Propolis from apiculture is known for wide range of medicinal properties owing to its vast chemical constituents including polyphenols, flavonoids and anticancer agent Caffeic acid phenethyl ester (CAPE).

Objectives: The objective of the study was to extract and standardize Indian propolis (IP) with respect to selected markers by newly developed High performance liquid chromatography (HPLC) method, to evaluate in vitro and in vivo anticancer activity and biosafety of Indian propolis.

Materials and methods: IP was extracted, optimized and standardized using a newly developed and validated HPLC method for simultaneous estimation of caffeic acid, apigenin, quercetin and CAPE. The standardised ethanolic extract of IP (EEIP) was screened for in vitro cytotoxicity using sulforhodamine B (SRB) assay, in vivo anti-carcinogenic effect against Dalton's Lymphoma ascites (DLA) cells, hemolytic effect and pesticide analysis.

Results: The EEIP was found to contain more amount of total flavonoids (23.61+ 0.0452 mg equivalent of quercetin/g), total polyphenolics (34.82 + 0.0785 mg equivalent of gallic acid/g) and all selected markers except caffeic acid compared to all other extracts. EEIP showed better anti-cancer potential than CAPE on MCF-7 and HT-29 cell line and significant ($p < 0.01$) in vivo anti-carcinogenic effects against DLA in comparison with 5-fluorouracil. EEIP was found to be non-hemolytic.

Conclusion: From in vitro cytotoxicity, in vivo anti-carcinogenicity and biosafety studies it can be concluded that the standardized EEIP is safe and can be considered for further development as a biomedicine.

Kaur G, Sankrityayan H, Dixit D et al. Cocos nucifera in combination with metformin for modulation of diabetic symptoms in streptozotocin induced diabetic rats. J Ayurveda Integr Med. 2017 Dec 12. pii: S0975-9476(16)30301-1.

Abstract:

Background: *Cocos nucifera*, belonging to Arecaceae family, holds quite an importance in the Indian traditional medicinal system. *C.nucifera* inflorescence (CnI) has been reported in the literature to be useful in the treatment of diarrhoea, dysentery, diabetes, and dyspepsia. In this study, we aimed to evaluate the efficacy of CnI as an adjuvant with metformin in ameliorating Type-2 diabetes mellitus (T2-DM).

Objective: To evaluate antidiabetic activity of CnI in combination with metformin in Streptozotocin (STZ) induced diabetic rats.

Materials and methods: Diabetes was induced in male Wistar rats using streptozotocin (45 mg/kg; i.p.). Plasma glucose level (PGL) was estimated after 72 h of STZ injection. Ethanolic extract of CnI (250 mg/kg and 500 mg/kg) per se and in combination with metformin (22.5 mg/kg) was administered orally once daily to rats for a period of 28 days. PGL level was estimated on 7th, 14th and 21st day followed by Oral Glucose Tolerance Test (OGTT) and PGL both on the 28th day of treatment. DPPH assay was performed to evaluate antioxidant activity of CnI extract.

Results: Extract of CnI (250 mg/kg and 500 mg/kg alone and the combination of extract (250 mg/kg) along with metformin (22.5 mg/kg) significantly decreased PGL ($p < 0.0001$) on 7th, 14th, 21st and 28th days. Histopathological analysis of pancreatic tissue showed that treatment with CnI extract per se and in combination with metformin improved the damaged architecture of pancreas.

Conclusion: The combination therapy of CnI and metformin produced a significant antidiabetic effect than that of the extract alone and provides a scientific rationale for their use in antidiabetic therapy as an adjuvant.

Kumar A, Singh AK, Kaushik MS et al. Interaction of turmeric (*Curcuma longa* L.) with beneficial microbes: A review. 3 Biotech. 2017 Dec;7(6):357.

Abstract:

Curcuma longa L., commonly known as turmeric, is a rhizomatous herb of the family Zingiberaceae. It is mostly used as a spice, a coloring agent and broadly used in traditional medicine such as Ayurveda, Unani, etc., Turmeric rhizomes interact with a large numbers of rhizosphere-associated microbial species, and some enter the plant tissue and act as endophytes. Both rhizospheric and endophytic species are directly or indirectly involved in growth promotion and disease management in plants and also play an important role in the modulation of morphological growth, secondary metabolite production, curcumin content, antioxidant properties, etc. The present review focuses on the rhizobacterial and endophytic bacterial and fungal populations associated with the turmeric.

Mishra D, Tubaki BR. Effect of Brahmi vati and Sarpagandha Ghana vati in management of essential hypertension - A randomized, double blind, controlled clinical study. J Ayurveda Integr Med. 2017 Dec 11. pii: S0975-9476(16)30335-7.

Abstract:

Background: Essential hypertension (EHTN) is emerging as one of the most prevalent disorder with higher rate of complications, morbidity and mortality. Brahmi vati, an Ayurvedic medicine is explored for its efficacy in the management of EHTN.

Methods: 68 patients of age group 20-60 years, of either sex meeting the JNC 7 criteria of EHTN were randomly divided into two groups, group A and group B. Group A and group B received capsule Brahmi vati 500 mg and capsule Sarpagandha Ghana vati 500 mg respectively twice a day for 30 days. Assessments were done through various variables like systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), lipid profiles, Hamilton anxiety rating scale, 2 weeks sleep diary, serum creatinine, hemoglobin, total leukocyte count and erythrocyte sedimentation rate. Follow up visit was on every 15th day.

Results: Study showed that both Brahmi vati and Sarpagandha Ghanavati produced significant improvement in most of the variables and were comparable. Significant improvements were seen in various variables like SBP, DBP, MAP, Hamilton anxiety rating scale, subjective sleep profiles and total cholesterol. However Brahmi vati showed significant increase in weight and Body Mass Index (BMI). SarpagandhaGhanavati produced reduction in total cholesterol and LDL. Both groups showed good safety profile evaluated through serum creatinine assessment.

Conclusion: Clinical efficacy of Sarpagandha Ghana vati and Brahmi vati on EHTN showed that both were effective, safe and comparable. Both were comprehensively effective in management of EHTN.

Ram Manohar P, Sorokin O, Chacko J et al. An exploratory clinical study to determine the utility of heart rate variability analysis in the assessment of dosha imbalance. J Ayurveda Integr Med. 2017 Dec 18. pii: S0975-9476(17)30115-8.

Abstract:

The present study is a comparison of the data of spectral analysis of heart rate variability with clinical evaluation of pathological state of doshas. The calculated cardiointervalography values are combined into three integral indexes, which according to the authors' opinion reflect the influence on heart rhythm of vata, pitta and kapha, the regulation systems of the body known as doshas in Ayurveda. Seven gross dosha imbalances were assessed to test the agreement between the two methods in this study. Heart Rate Variability (HRV) spectral data was collected from 42 participants to make the comparison with the clinical assessment of dosha imbalance. Clinical method of dosha assessment and method of calculating integral indexes by cardiointervalography data showed substantial agreement by Kappa coefficient statistic ($k = 0.78$) in assessment of gross dosha imbalance. The results of the data generated from this pilot study warrant further studies to rigorously validate the algorithms of HRV analysis in understanding dosha imbalance in Ayurvedic clinical practice and research settings.

Rao RV. Ayurveda and the science of aging. J Ayurveda Integr Med. 2017 Dec 21. pii: S0975-9476(17)30411-4

Abstract:

Since time immemorial, humanity has been concerned with developing and preserving youthful vigor, and extending longevity by stopping or delaying the aging process. By 2030, one in five of the world population will be over 65 years old. Longevity and old age are accompanied with a variety of health challenges and population studies indicate that the elderly will use between three to five times more healthcare services compared to the younger population. Modern medicine has made a great deal of progress in understanding the aging process and in controlling age-associated health issues including heart attacks, strokes, diabetes, cancer, senility, and arthritis. Thus, every individual is now looking forward to a youthful, productive lifespan of 100 or more years filled with unlimited health and opportunity. Research by aging experts is focused on ways to go against the natural order of the aging process in order to delay it. Interventions include among other things anti-aging pills, restricted food consumption and cloning body parts to stay young and delay biological aging. Ayurveda, one of the world's most authoritative mind-body-spirit medicinal systems, offers various concepts of the aging process. This system of medicine includes therapies for healthy aging so as to create an optimal health and lengthen an individual's healthspan by living in harmony with nature. This review will explore various aspects of aging and longevity by comparing the science of aging as defined by modern medicine with the Ayurvedic treatise of Jara and Vriddhavastha.

Sayi DS, Mohan S, Vinod Kumar K. Molecular characterization of a proteolytic bacterium in Panchagavya: An organic fertilizer mixture. J Ayurveda Integr Med. 2017 Dec 1. pii: S0975-9476(16)30406-5

Abstract:

Fermented product of combination of five major substances obtained from cow, viz., urine, milk, ghee, curd, and dung, is known as Panchagavya. Its pro-agricultural and medicinal value has been traditionally known to Indian farmers from Vedic period. In this study, the proteolytic properties of Panchagavya were investigated using Skim Milk Agar (SMA) form, a commercially available Panchagavya product. Proteolytic bacteria, SNCK-3, was successfully isolated. Further identification using 16s rDNA sequencing revealed that SNCK-3 belonged to *Acinetobacter* spp., which is a species of biofertilizer group. This observation justified the pro-agricultural role of Panchagavya. The present study represents primary data and it is essential to develop a new area of research for exposing the invisible or dormant Vedic biotechnological concepts, like Panchagavya.

Singh RK, Kumar S, Aman AK et al. Study on physical properties of Ayurvedic nanocrystalline Tamra Bhasma by employing modern scientific tools. J Ayurveda Integr Med. 2017 Dec 15. pii: S0975-9476(17)30329-7

Abstract:

Background: Tamra Bhasma is derived from metallic copper that is recommended for different ailments of liver and spleen, dropsy, abdominal pain, heart disease, colitis, tumors, anemia, loss of appetite, tuberculosis, as well as eye problems.

Objectives: The knowledge of crystallite size and active ingredients in Bhasma materials is limited restricting its use as nanomedicine in the modern era. Also, the 2015 Nobel prize

in medicine has motivated many researchers towards traditional medicines. Therefore, the different chemical and physical properties of prepared Tamra Bhasma has been studied by modern experimental tools (XRD, VSM, SEM, FTIR and PL spectrometer) and the preliminary testing of Tamra Bhasma nanoparticles was examined on bacteria.

Materials and methods: Bhasma is prepared by metals and minerals using three step procedures e.g. Shodhana, Bhavana and Marana. In the present work, for the preparation of Tamra Bhasma, pulverized copper wire was used and prepared by the principle of Puta (incineration) in an Electrical Muffle Furnace (EMF).

Results: X-ray diffraction analysis and scanning electron microscopy results revealed that the crystallite size of Bhasma powder was less than 100 nm and nanocrystallites of agglomerated size in micrometer. Magnetometer measurement supports its medicinal value. Photoluminescence (PL) properties of nanocrystalline Bhasma powder was investigated in UV-NIR region and shows luminescence in visible region. The antimicrobial study of Tamra Bhasma shows effectiveness on bacteria and, may be useful to control the bacterial infection disease.

Conclusion: Scientific data obtained using modern scientific tools and evidence would support in utilizing the ancient Indian wisdom of Ayurveda for the development of newer drugs as a modern nanomedicine and in other possible technological applications.

Singh SP, Chandel VS, Manohar R. Dielectric study of important medicinal oil: Clove oil. J Ayurveda Integr Med. 2017 Dec 8.

Abstract:

Dielectric properties of clove oil were determined using an impedance gain phase analyzer (HP 4194 A) at discrete frequencies between 10 kHz and 3 MHz and a range of temperature between 25 °C and 45 °C. A micro processor controller based temperature controller (Julabo F-25) was used for keeping the temperature of clove oil constant. Dielectric constant of the sample is found to decrease with increase in frequency and temperature, while dielectric loss decreases with increase in frequency but increases with increase in temperature. Penetration depth has been calculated with the help of dielectric data and is found to decrease with increase in frequency.

Suma TS, Ravikumar K, Somashekhar BS et al. Documentation of 'Plant Drugs' dispensed via local weekly shanties of Madurai City, India. J Ayurveda Integr Med. 2017 Dec 7. pii: S0975-9476

Abstract:

Background: The Valaiyār (Moopanar) communities of Tamil Nadu are traditionally known for catching rats and snakes from the agricultural fields. Prior to independence, some of these families have faced socio-economic changes and chosen to become herbalists in Madurai city. They are mainly engaged in collecting and dispensing fresh and dried plant drugs in its 'natural form' at Tiḷagar tīḍal market of Madurai city. Their

business is unique, because customers receive 'prescriptions' and 'plant drugs', unlike the conventional dispensaries. Their world view is: 'to cure the ailing in natural way'.

Objectives: To document plant drugs collected and dispensed by some of the families belonging to Valaiyār (Moopanar) community in the Tīlagar tīdal market.

Materials and methods: Ethnobotanical tools were employed to document various aspects of the practices including resource and knowledge base, medicinal uses, dosage, collection of herbarium and raw drug specimens. Integrative approach was adapted to document the trade dynamics.

Results: During the study, 133 medicinal plant species belonging to 50 families were documented. 71% of species were sourced from wild and non-forest areas. 272 simple and compound remedies were recorded.

Conclusion: Local markets/shanties like these are 'Traditional Medicine (TM) health care services at door step'. They cater to local health care needs along with conventional system in a synergistic manner and provide adaptable, local solutions using local resources.

Uchenna UE, Shori AB, Baba AS. Tamarindus indica seeds improve carbohydrate and lipid metabolism: An in vivo study. J Ayurveda Integr Med. 2017 Dec 1. pii: S0975-9476(16)30508-3.

Abstract:

Background: The tamarind seeds have a lot of nutrients that may be used to control cholesterol or glucose levels.

Objectives: The effects of tamarind seeds (T) on lipid and carbohydrate metabolism in rats were studied. Rats were offered basal diet (BD) with T (2%, 4% or 8%) or without T.

Materials and methods: Feeding and growth performance in rats were measured and samples of liver and blood were analyzed for glycogen content and levels of cholesterol and glucose respectively.

Results: The inclusion of T in the diet influences the feeding and growth performance in rats. The serum cholesterol level was reduced ($p < 0.05$) in Sprague Dawley (SD) rats fed on basal diet (BD) containing 4% and 8% T (0.24 ± 0.14 g/l and 0.31 ± 0.06 g/l respectively) compared to control (0.79 ± 0.04 g/l). The serum glucose levels in the spontaneous hypertensive rats (SHR) was lower (50.74 ± 2.50 mg/dl; $p < 0.05$) than control (93.52 ± 10.83 mg/dl) at 4% T. Incorporation of increasing doses of T resulted in linear increase of glycogen storage in livers of SD rats fed on BD and high sucrose diet.

Conclusion: Tamarind seeds can lower blood glucose and serum cholesterol and enhance storage of glycogen in rats.

UNANI MEDICINE

Ahmed M, Azmat A. Decreased brain serotonin turnover rate following administration of Sharbat-e-Ahmed Shah produces antidepressant and anxiolytic effect in rats. *Metab Brain Dis.* 2017 Dec;32(6):1785-1790.

Abstract:

Sharbat-e-Ahmed Shah (SAS) has usually been used in Traditional Unani Medicine (TUM) for depression and insomnia but still not evaluated for its anti-depressant and Neuropharmacological activity. In the present study, a Human dose of SAS (0.6 ml/kg/d) was administered orally to the rats for 15 consecutive days. Antidepressant and anxiolytic were screened scientifically in rats by using Forced swim test and light and dark box test. At the end of study high-performance liquid chromatographic (HPLC) method with electrochemical (EC) detector was used for the measurement of blood and brain tryptophan and brain serotonin levels. The present reported results are according to what is known in TUM, where is prescribed as an antidepressant agent. After the administration, SAS (at a human dose for 15 days) reduced the immobility time in rats analogous to Imipramine (positive control) indicating the antidepressant effect of SAS. In the present study, Diazepam or SAS (0.6 ml/kg/day) treated rats stayed in the illuminated side of the light-dark box, as compare to control rats (Veh, 134.62 ± 4.430 s; SAS 0.6 ml/kg, 192.2 ± 8.11 s; DZP 1.0 mg/kg, $205.21.20 \pm 10.26$ s, $p < 0.05$). It was also observed that SAS increased the availability of tryptophan in blood and brain and hence increases 5-hydroxytryptamine (Serotonin: 5HT) in the brain. At the end, it was concluded that SAS contains some active principles which increase the availability of neurochemical (tryptophan and 5HT) and decrease the 5HT turnover rate thus causes antidepressant and anxiolytic effects in experimental animals.

Bhat TA, Begum W. Efficacy of Tamarindus indicus, Melia azadirach and Santalum album in syndromic management of abnormal vaginal discharge: A single-blind randomised controlled trial. *J Complement Integr Med.* 2017 Dec 19.

Abstract:

Background At least 25% of women attending genitourinary medicine (GUM) clinics receive treatment for one of the three common causes of abnormal vaginal discharge: bacterial vaginosis, candidiasis and trichomoniasis. Syndromic diagnostic approach was adopted by National AIDS Control Organisation (NACO) India, at the primary health centre level. Syndromic management implies the simultaneous treatment of two or more infections. The aim of this study was to assess efficacy of sandal safaid, maghze tukhme bakayin and khaste tamar hindi in syndromic management of Sailanur rehm. Methods This study was a randomized, single blind, standard controlled trial. It was conducted to compare efficacy of formulation which contains buradae sandal safaid, safoofe maghze tukhme bakayin, safoofe khaste tamar hindi and safoofe shakkar safaid against combination of azithromycin, fluconazole and secnidazole on diagnosed subjects of Sailanur rehm. Test group received 10 g of test drug B.D for 21 days while control group received single dose of standard drug to both the partners. Vaginal symptom score (VSS)

was used for assessing discharge and associated complaints. Visual analogous scale (VAS) was used for assessing low backache and lower abdominal pain. Results There were no significant differences between the two groups concerning baseline characteristics ($p>0.05$). VSS was significantly decreased with $p<0.001$ for both control and test group. VAS was significantly decreased with $p<0.001$ and $p=0.07$ in test and control group respectively for low backache. For lower abdominal pain $p=0.006$ for both groups after the completion of treatment. Conclusions The formulation can effectively alleviate the disease with associated symptoms without any side effects. It can be used in syndromic management of vaginal discharge. Future research is on large sample size.

Kumar A, Singh AK, Kaushik MS et al. Interaction of turmeric (*Curcuma longa* L.) with beneficial microbes: A review. 3 Biotech. 2017 Dec;7(6):357.

Abstract:

Curcuma longa L., commonly known as turmeric, is a rhizomatous herb of the family Zingiberaceae. It is mostly used as a spice, a coloring agent and broadly used in traditional medicine such as Ayurveda, Unani, etc., Turmeric rhizomes interact with a large numbers of rhizosphere-associated microbial species, and some enter the plant tissue and act as endophytes. Both rhizospheric and endophytic species are directly or indirectly involved in growth promotion and disease management in plants and also play an important role in the modulation of morphological growth, secondary metabolite production, curcumin content, antioxidant properties, etc. The present review focuses on the rhizobacterial and endophytic bacterial and fungal populations associated with the turmeric.

Suma TS, Ravikumar K, Somashekhar BS et al. Documentation of 'Plant Drugs' dispensed via local weekly shanties of Madurai City, India. J Ayurveda Integr Med. 2017 Dec 7. pii: S0975-9476(16)30447-8.

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YOGA

Balakrishnan R, Nanjundaiiah RM, Manjunath NK. Voluntarily induced vomiting - A yoga technique to enhance pulmonary functions in healthy humans. J Ayurveda Integr Med. 2017 Dec 11. pii: S0975-9476(17)30011-6.

Abstract:

Vomiting is a complex autonomic reflex orchestrated by several neurological centres in the brain. Vagus, the cranial nerve plays a key role in regulation of vomiting. Kunjal Kriya (Voluntarily Induced Vomiting), is a yogic cleansing technique which involves voluntarily inducing vomiting after drinking saline water (5%) on empty stomach. This study was designed with an objective to understand the effect of voluntary induced vomiting (ViV) on pulmonary functions in experienced practitioners and novices and derive its possible therapeutic applications. Eighteen healthy individuals volunteered for the study of which nine had prior experience of ViV while nine did not. Pulmonary function tests were performed before and after 10 min of rest following ViV. Analysis of Covariance was performed adjusted for gender and baseline values. No significant changes were observed across genders. The results of the present study suggest a significant increase in Slow Vital Capacity [$F_{(1,13)} = 5.699$; $p = 0.03$] and Forced Inspiratory Volume in 1st Second [$p = 0.02$] and reduction in Expiratory Reserve Volume [$F_{(1,13)} = 5.029$; $p = 0.04$] and Respiratory Rate [$F_{(1,13)} = 3.244$, $p = 0.09$]. These changes suggest the possible role of ViV in enhancing the endurance of the respiratory muscles, decreased airway resistance, better emptying of lungs and vagal predominance respectively. We conclude that ViV when practiced regularly enhances the endurance of the respiratory muscles and decreases airway resistance. These findings also indicate need for scientific understanding of ViV in the management of motion sickness and restrictive pulmonary disorders like bronchitis and bronchial asthma.

Cox AE, Ullrich-French S, Howe HS et al. A pilot yoga physical education curriculum to promote positive body image. Body Image. 2017 Dec;23:1-8.

Abstract:

We examined the effects of a pilot yoga-based physical education (PE) curriculum by testing for change in trait body surveillance, physical self-worth, and body appreciation. Further, we examined the relationships among change in body image variables and the role of state mindfulness in predicting state body surveillance during classes. Adolescents participated in 12 weeks of yoga-based ($n=20$; $M_{age}=16.45$, 90% female) or traditional ($n=23$; $M_{age}=14.52$, 57% female) PE. Results showed significant ($p=.004$), moderate decreases in trait body surveillance and minimal nonsignificant ($p=.11$) increases in physical self-worth. Change in trait body surveillance was inversely related to change in physical self-worth and body appreciation in yoga participants. Multi-level modeling analyses revealed that more mindful students also surveyed their body less during class. Intentionally structured yoga participation may support positive body image among adolescents.

Cramer H. Where and How does Yoga Work? - A Scientific Overview. Dtsch Med Wochenschr. 2017 Dec;142(25):1925-1929

Abstract:

As a traditional health care system, yoga combines physical activity, breathing techniques and meditation. It is increasingly used as a preventive or therapeutic means. Yoga has been researched in hundreds of randomized controlled trials. Positive effects are especially found for chronic pain conditions, hypertension, depression and in supportive cancer care. While there are case reports of serious adverse events associated with yoga, the risk seems to be extremely low and comparable to other forms of physical activity. Yoga can thus be considered as a safe and effective adjunct therapy for a number of conditions.

D'Souza V, Daudt H, Kazanjian A. Survivorship care plans for breast cancer patients: understanding the quality of the available evidence. *Curr Oncol.* 2017 Dec;24(6):e446-e465

Abstract:

Aim: The overall goal of the present study was to contribute to consistency in the provincial approach to survivorship care planning through knowledge synthesis and exchange. Our review focused on the research concerning the physical and emotional challenges of breast cancer (bca) patients and survivors and the effects of the interventions that have been used for lessening those challenges.

Methods: The psychosocial topics identified in bca survivorship care plans created by two different initiatives in our province provided the platform for our search criteria: quality of life (qol), sexual function, fatigue, and lifestyle behaviours. We conducted an umbrella review to retrieve the best possible evidence, and only reviews investigating the intended outcomes in bca survivors and having moderate-to-high methodologic quality scores were included.

Results: Of 486 reports retrieved, 51 reviews met the inclusion criteria and form part of the synthesis. Our results indicate that bca patients and survivors experience numerous physical and emotional challenges and that interventions such as physical activity, psychoeducation, yoga, and mindfulness-based stress reduction are beneficial in alleviating those challenges.

Conclusions: Our study findings support the existing survivorship care plans in our province with respect to the physical and emotional challenges that bca survivors often face. However, the literature concerning cancer risks specific to bca survivors is scant. Although systematic reviews are considered to be the "gold standard" in knowledge synthesis, our findings suggest that much remains to be done in the area of synthesis research to better guide practice in cancer survivorship.

Gallegos AM, Crean HF, Pigeon WR et al. Meditation and yoga for posttraumatic stress disorder: A meta-analytic review of randomized controlled trials. *Clin Psychol Rev.* 2017 Dec;58:115-124.

Abstract:

Posttraumatic stress disorder (PTSD) is a chronic and debilitating disorder that affects the lives of 7-8% of adults in the U.S. Although several interventions demonstrate clinical effectiveness for treating PTSD, many patients continue to have residual symptoms and ask for a variety of treatment options. Complementary health approaches, such as meditation and yoga, hold promise for treating symptoms of PTSD. This meta-analysis evaluates the effect size (ES) of yoga and meditation on PTSD outcomes in adult patients. We also examined whether the intervention type, PTSD outcome measure, study

population, sample size, or control condition moderated the effects of complementary approaches on PTSD outcomes. The studies included were 19 randomized control trials with data on 1173 participants. A random effects model yielded a statistically significant ES in the small to medium range (ES=-0.39, $p < 0.001$, 95% CI [-0.57, -0.22]). There were no appreciable differences between intervention types, study population, outcome measures, or control condition. There was, however, a marginally significant higher ES for sample size ≤ 30 (ES=-0.78, $k=5$). These findings suggest that meditation and yoga are promising complementary approaches in the treatment of PTSD among adults and warrant further study.

Grotle M, Hagen KB. Yoga classes may be an alternative to physiotherapy for people with chronic nonspecific low back pain [synopsis]. J Physiother. 2018 Jan;64(1):57.

Hartfiel N, Clarke G, Havenhand J et al. Cost-effectiveness of yoga for managing musculoskeletal conditions in the workplace. Occup Med (Lond). 2017; 67(9):687-695.

Abstract:

Background: Back pain and musculoskeletal conditions negatively affect the health-related quality of life (HRQL) of employees and generate substantial costs to employers.

Aims: To assess the cost-effectiveness of yoga for managing musculoskeletal conditions.

Methods: A randomized controlled trial evaluated an 8-week yoga programme, with a 6-month follow-up, for National Health Service (NHS) employees. Effectiveness in managing musculoskeletal conditions was assessed using repeated-measures generalized linear modelling for the Roland-Morris Disability Questionnaire (RDQ) and the Keele STarT Back Screening Tool. Cost-effectiveness was determined using area-under-the-curve linear regression for assessing HRQL from healthcare and societal perspectives. The incremental cost per quality-adjusted life year (QALY) was also calculated. Sickness absence was measured using electronic staff records at 6 months.

Results: There were 151 participants. At 6 months, mean differences between groups favouring yoga were observed for RDQ [-0.63 (95% CI, -1.78, 0.48)], Keele STarT [-0.28 (95% CI, -0.97, 0.07)] and HRQL (0.016 QALY gain). From a healthcare perspective, yoga yielded an incremental cost-effectiveness ratio of £2103 per QALY. Given a willingness to pay for an additional QALY of £20 000, the probability of yoga being cost-effective was 95%. From a societal perspective, yoga was the dominant treatment compared with usual care. At 6 months, electronic staff records showed that yoga participants missed a total of 2 working days due to musculoskeletal conditions compared with 43 days for usual care participants.

Conclusions: Yoga for NHS employees may enhance HRQL, reduce disability associated with back pain, lower sickness absence due to musculoskeletal conditions and is likely to be cost-effective.

Hernández SE, Barros Loscertales A, Xiao Y et al. Gray Matter and Functional Connectivity in Anterior Cingulate Cortex are Associated with the State of Mental Silence During Sahaja Yoga Meditation. Neuroscience. 2017 Dec 22. pii: S0306-4522(17)30907-7.

Abstract:

Some meditation techniques teach the practitioner to achieve the state of mental silence. The aim of this study was to investigate brain regions that are associated with their volume and functional connectivity (FC) with the depth of mental silence in long-term practitioners of Sahaja Yoga Meditation. Twenty-three long-term practitioners of this meditation were scanned using Magnetic Resonance Imaging. In order to identify the neural correlates of the depth of mental silence, we tested which gray matter volumes (GMV) were correlated with the depth of mental silence and which regions these areas were functionally connected to under a meditation condition. GMV in medial prefrontal cortex including rostral anterior cingulate cortex were positively correlated with the subjective perception of the depth of mental silence inside the scanner. Furthermore, there was significantly increased FC between this area and bilateral anterior insula/putamen during a meditation-state specifically, while decreased connectivity with the right thalamus/parahippocampal gyrus was present during the meditation-state and the resting-state. The capacity of long-term meditators to establish a durable state of mental silence inside an MRI scanner was associated with larger gray matter volume in a medial frontal region that is crucial for top-down cognitive, emotion and attention control. This is furthermore corroborated by increased FC of this region during the meditation-state with bilateral anterior insula/putamen, which are important for interoception, emotion, and attention regulation. The findings hence suggest that the depth of mental silence is associated with medial fronto-insular-striatal networks that are crucial for top-down attention and emotional control.

Lawrence M, Celestino Junior FT, Matozinho HH et al. Yoga for stroke rehabilitation. Cochrane Database Syst Rev. 2017 Dec 8;12:CD011483

Abstract:

Background: Stroke is a major health issue and cause of long-term disability and has a major emotional and socioeconomic impact. There is a need to explore options for long-term sustainable interventions that support stroke survivors to engage in meaningful activities to address life challenges after stroke. Rehabilitation focuses on recovery of function and cognition to the maximum level achievable, and may include a wide range of complementary strategies including yoga. Yoga is a mind-body practice that originated in India, and which has become increasingly widespread in the Western world. Recent evidence highlights the positive effects of yoga for people with a range of physical and psychological health conditions. A recent non-Cochrane systematic review concluded that yoga can be used as self-administered practice in stroke rehabilitation.

Objectives: To assess the effectiveness of yoga, as a stroke rehabilitation intervention, on recovery of function and quality of life (QoL).

Search methods: We searched the Cochrane Stroke Group Trials Register (last searched July 2017), Cochrane Central Register of Controlled Trials (CENTRAL) (last searched July 2017), MEDLINE (to July 2017), Embase (to July 2017), CINAHL (to July 2017), AMED (to July 2017), PsycINFO (to July 2017), LILACS (to July 2017), SciELO (to July 2017), IndMED (to July 2017), OTseeker (to July 2017) and PEDro (to July 2017). We also searched four trials registers, and one conference abstracts database. We screened reference lists of relevant publications and contacted authors for additional information.

Selection criteria: We included randomised controlled trials (RCTs) that compared yoga with a waiting-list control or no intervention control in stroke survivors.

Data collection and analysis: Two review authors independently extracted data from the included studies. We performed all analyses using Review Manager (RevMan). One review author entered the data into RevMan; another checked the entries. We discussed disagreements with a third review author until consensus was reached. We used the Cochrane 'Risk of bias' tool. Where we considered studies to be sufficiently similar, we conducted a meta-analysis by pooling the appropriate data. For outcomes for which it was inappropriate or impossible to pool quantitatively, we conducted a descriptive analysis and provided a narrative summary.

Main results: We included two RCTs involving 72 participants. Sixty-nine participants were included in one meta-analysis (balance). Both trials assessed QoL, along with secondary outcomes measures relating to movement and psychological outcomes; one also measured disability. In one study the Stroke Impact Scale was used to measure QoL across six domains, at baseline and post-intervention. The effect of yoga on five domains (physical, emotion, communication, social participation, stroke recovery) was not significant; however, the effect of yoga on the memory domain was significant (mean difference (MD) 15.30, 95% confidence interval (CI) 1.29 to 29.31, $P = 0.03$), the evidence for this finding was very low grade. In the second study, QoL was assessed using the Stroke-Specific QoL Scale; no significant effect was found. Secondary outcomes included movement, strength and endurance, and psychological variables, pain, and disability. Balance was measured in both studies using the Berg Balance Scale; the effect of intervention was not significant (MD 2.38, 95% CI -1.41 to 6.17, $P = 0.22$). Sensitivity analysis did not alter the direction of effect. One study measured balance self-efficacy, using the Activities-specific Balance Confidence Scale (MD 10.60, 95% CI -7.08 to 28.28, $P = 0.24$); the effect of intervention was not significant; the evidence for this finding was very low grade. One study measured gait using the Comfortable Speed Gait Test (MD 1.32, 95% CI -1.35 to 3.99, $P = 0.33$), and motor function using the Motor Assessment Scale (MD -4.00, 95% CI -12.42 to 4.42, $P = 0.35$); no significant effect was found based on very low-grade evidence. One study measured disability using the modified Rankin Scale (mRS) but reported only whether participants were independent or dependent. No significant effect was found: (odds ratio (OR) 2.08, 95% CI 0.50 to 8.60, $P = 0.31$); the evidence for this finding was very low grade. Anxiety and depression were measured in one study. Three measures were used: the Geriatric Depression Scale-Short Form (GDS15), and two forms of State Trait Anxiety Inventory (STAI, Form Y) to measure state anxiety (i.e. anxiety experienced in response to stressful situations) and trait anxiety (i.e. anxiety associated with chronic psychological disorders). No significant effect was found for depression (GDS15, MD -2.10, 95% CI -4.70 to 0.50, $P = 0.11$) or for trait anxiety (STAI-Y2, MD -6.70, 95% CI -15.35 to 1.95, $P = 0.13$), based on very low-grade evidence. However, a significant effect was found for state anxiety: STAI-Y1 (MD -8.40, 95% CI -16.74 to -0.06, $P = 0.05$); the evidence for this finding was very low grade. No adverse events were reported. Quality of the evidence We assessed the quality of the evidence using GRADE. Overall, the quality of the evidence was very low, due to the small number of trials included in the review both of which were judged to be at high risk of bias, particularly in relation to incompleteness of data and selective reporting, and especially regarding the representative nature of the sample in one study.

Authors' conclusions: Yoga has the potential for being included as part of patient-centred stroke rehabilitation. However, this review has identified insufficient information to confirm or refute the effectiveness or safety of yoga as a stroke rehabilitation treatment.

Further large-scale methodologically robust trials are required to establish the effectiveness of yoga as a stroke rehabilitation treatment.

Lin YC, Wan L, Jamison RN. Using Integrative Medicine in Pain Management: An Evaluation of Current Evidence. *Anesth Analg*. 2017; 125(6):2081-2093

Abstract:

Complementary medicine therapies are frequently used to treat pain conditions such as headaches and neck, back, and joint pain. Chronic pain, described as pain lasting longer than 3-6 months, can be a debilitating condition that has a significant socioeconomic impact. Pharmacologic approaches are often used for alleviating chronic pain, but recently there has been a reluctance to prescribe opioids for chronic noncancer pain because of concerns about tolerance, dependence, and addiction. As a result, there has been increased interest in integrative medicine strategies to help manage pain and to reduce reliance on prescription opioids to manage pain. This article offers a brief critical review of integrative medical therapies used to treat chronic pain, including nutritional supplements, yoga, relaxation, tai chi, massage, spinal manipulation, and acupuncture. The goal of this article is to identify those treatments that show evidence of efficacy and to identify gaps in the literature where additional studies and controlled trials are needed. An electronic search of the databases of PubMed, The Cochrane Library, EMBASE, PsycINFO, and Science Citation Index Expanded was conducted. Overall, weak positive evidence was found for yoga, relaxation, tai chi, massage, and manipulation. Strong evidence for acupuncture as a complementary treatment for chronic pain that has been shown to decrease the usage of opioids was found. Few studies were found in which integrative medicine approaches were used to address opioid misuse and abuse among chronic pain patients. Additional controlled trials to address the use of integrative medicine approaches in pain management are needed.

Majeed MH, Ali AA, Sudak DM. Mindfulness-based interventions for chronic pain: Evidence and applications. *Asian J Psychiatr*. 2017 Dec 5;32:79-83

Abstract:

Chronic pain is estimated to occur in from 5.5% to 33% of the world's adult population (Gureje et al., 1998). Chronic pain is frequently treated with opiates, which has produced an opiate addiction crisis (Dowell et al., 2016). Several non-pharmacological treatment alternatives can help manage chronic pain. There is moderate evidence that mindfulness-based interventions (MBIs) such as meditation, yoga, and stress reduction lower the perception of pain, increase mobility, improve functioning and well-being. By integrating MBIs and other therapeutic interventions in a multi-disciplinary pain management plan, clinicians can improve treatment outcomes and potentially decrease pain-related medication utilization.

Munk R. Yoga classes may be an alternative to physiotherapy for people with chronic nonspecific low back pain [commentary]. *J Physiother*. 2018 Jan;64(1):57

Neumark Sztainer D, MacLehose RF, Watts AW et al. Yoga and body image: Findings from a large population-based study of young adults. *Body Image*. 2017 Dec 27;24:69-75

Abstract:

This study explored the potential for yoga to promote body satisfaction in a general population of young adults. The sample included 1664 participants (M age: 31.1, SD = 1.6 years) in Project EAT, a 15-year longitudinal study. Data from the third and fourth waves (EAT-III and EAT-IV), collected five years apart, were utilized. Practicing yoga (≥ 30 min/week) was reported by 16.2% of young adults. After adjusting for EAT-III body satisfaction and body mass index, yoga practitioners had higher concurrent body satisfaction at EAT-IV than those not practicing yoga (difference: 1.5 units [95% CI: 0.1-2.8], $p = .03$). Among participants within the lowest quartile of prior (EAT-III) body satisfaction, there was preliminary evidence that body satisfaction at EAT-IV was higher among yoga practitioners than in other young adults. Findings suggest that yoga may be associated with improved body satisfaction, particularly among young adults with low prior body satisfaction.

Pascoe MC, Thompson DR, Ski CF. Yoga, mindfulness-based stress reduction and stress-related physiological measures: A meta-analysis. Psychoneuroendocrinology. 2017 Dec;86:152-168.

Abstract:

Background and objectives: Practices that include yoga asanas and mindfulness-based stress reduction for the management of stress are increasingly popular; however, the neurobiological effects of these practices on stress reactivity are not well understood. Many studies investigating the effects of such practices fail to include an active control group. Given the frequency with which people are selecting such interventions as a form of self-management, it is important to determine their effectiveness. Thus, this review investigates the effects of practices that include yoga asanas, with and without mindfulness-based stress reduction, compared to an active control, on physiological markers of stress.

Materials and Methods: A systematic review and meta-analysis of randomised controlled trials published in English compared practices that included yoga asanas, with and without mindfulness-based stress reduction, to an active control, on stress-related physiological measures. The review focused on studies that measured physiological parameters such as blood pressure, heart rate, cortisol and peripheral cytokine expression. MEDLINE, AMED, CINAHL, PsycINFO, SocINDEX, PubMed, and Scopus were searched in May 2016 and updated in December 2016. Randomised controlled trials were included if they assessed at least one of the following outcomes: heart rate, blood pressure, heart rate variability, mean arterial pressure, C-reactive protein, interleukins or cortisol. Risk of bias assessments included sequence generation, allocation concealment, blinding of assessors, incomplete outcome data, selective outcome reporting and other sources of bias. Meta-analysis was undertaken using Comprehensive Meta-Analysis Software Version 3. Sensitivity analyses were performed using 'one-study-removed' analysis. Subgroup analysis was conducted for different yoga and control group types, including mindfulness-based stress reduction versus non-mindfulness-based stress reduction based interventions, different populations, length of intervention, and method of data analysis. A random-effects model was used in all analyses.

Results: Forty two studies were included in the meta-analysis. Interventions that included yoga asanas were associated with reduced evening cortisol, waking cortisol, ambulatory

systolic blood pressure, resting heart rate, high frequency heart rate variability, fasting blood glucose, cholesterol and low density lipoprotein, compared to active control. However, the reported interventions were heterogeneous.

Conclusions: Practices that include yoga asanas appear to be associated with improved regulation of the sympathetic nervous system and hypothalamic-pituitary-adrenal system in various populations.

Supriya R, Yu AP, Lee PH et al. Yoga training modulates adipokines in adults with high-normal blood pressure and metabolic syndrome. Scand J Med Sci Sports. 2017 Dec 5. doi: 10.1111/sms.13029.

Abstract:

Objectives: Metabolic syndrome (MetS) is associated with diabetes mellitus and cardiovascular diseases. Our previous study indicated that people with MetS showed a decrease in waist circumference and a decreasing trend in blood pressure after 1 year of yoga. This study investigated the effect of yoga on MetS people with high-normal blood pressure by exploring modulations in pro-inflammatory adipokines (leptin, chemerin, visfatin and plasminogen activator inhibitor-1 or PAI-1) and an anti-inflammatory adipokine (adiponectin).

Design & methods: A total of 97 Hong Kong Chinese individuals aged 57.6 ± 9.1 years with MetS and high-normal blood pressure were randomly assigned to control (n = 45) and yoga groups (n = 52). Participants in the control group were not given any intervention but were contacted monthly to monitor their health status. Participants in the yoga group underwent a yoga training programme with three 1-hour yoga sessions weekly for 1 year. The participants' sera were harvested and assessed for adipokines. Generalized estimating equation (GEE) was used to examine the interaction effect between 1 year of time (pre vs. post) and intervention (control vs. yoga).

Results: GEE analyses revealed significant interaction effects between 1-year of time and yoga intervention for the decreases in leptin and chemerin and the increase in adiponectin concentration in the sera examined.

Conclusion: These results demonstrated that 1 year of yoga training decreased pro-inflammatory adipokines and increased anti-inflammatory adipokine in adults with MetS and high-normal blood pressure. These findings support the beneficial role of yoga in managing MetS by favourably modulating adipokines. This article is protected by copyright. All rights reserved.

Telles S, Verma S, Sharma SK et al. Alternate-Nostril Yoga Breathing Reduced Blood Pressure While Increasing Performance in a Vigilance Test. Med Sci Monit Basic Res. 2017 Dec 29;23:392-398.

Abstract:

BACKGROUND Reports suggest that vigilance or sustained attention increases sympathetic activity. A persistent increase in sympathetic activity can lead to an increase in blood pressure. Alternate-nostril yoga breathing has been shown to be useful to (i) improve attention and (ii) decrease the systolic and diastolic blood pressure. Earlier studies did not report simultaneous recordings of the blood pressure and performance in vigilance tests after alternate-nostril yoga breathing. With this background, the present

study was planned to determine if 15 minutes of alternate nostril yoga breathing could improve the performance in a vigilance test without an increase in blood pressure. MATERIAL AND METHODS Fifteen healthy male volunteers participated in the study (group mean age \pm SD, 22.4 \pm 2.4 years). Participants were assessed on 3 separate days in 3 different sessions. These were (i) alternate nostril yoga breathing, (ii) breath awareness, and (iii) sitting quietly as a control. Blood pressure and the digit vigilance test were simultaneously assessed before and after each session. RESULTS Systolic blood pressure ($p < 0.01$), mean arterial blood pressure ($p < 0.05$), and the time taken to complete the digit vigilance test ($p < 0.05$) significantly decreased following alternate-nostril yoga breathing. The time taken to complete the digit vigilance test differed significantly between sessions ($p < 0.05$). The time taken to complete the digit vigilance test was also significantly decreased after sitting quietly ($p < 0.01$). CONCLUSIONS Alternate-nostril yoga breathing appears to improve performance in the digit vigilance test, along with a reduction in systolic blood pressure. This is suggestive of better vigilance without sympathetic activation.

Thind H, Lantini R, Balletto BL et al. The effects of yoga among adults with type 2 diabetes: A systematic review and meta-analysis. Prev Med. 2017 Dec;105:116-126.

Abstract:

The purpose of this meta-analysis was to examine the effects of yoga for glycemic control among adults with type 2 diabetes (T2DM). Comprehensive electronic databases searches located 2559 unique studies with relevant key terms. Studies were included if they (1) evaluated a yoga intervention to promote T2DM management, (2) used a comparison group, (3) reported an objective measure of glycemic control at post-intervention, and (4) had follow-up length or post-test of at least 8 weeks from baseline. Independent raters coded participant, design and methodological characteristics and intervention content. Summary effect sizes and 95% confidence intervals (CI) were calculated. Twenty-three studies with 2473 participants (mean age=53 years; 43% women) met eligibility criteria. Compared with controls, yoga participants were successful in improving their HbA1c ($d = 0.36$, 95% CI=0.16, 0.56; $k = 16$), FBG ($d = 0.58$, 95% CI=0.40, 0.76; $k = 20$), and PPBG ($d = 0.40$, 95% CI=0.23, 0.56; $k = 14$). Yoga was also associated with significant improvements in lipid profile, blood pressure, body mass index, waist/hip ratio and cortisol levels. Overall, studies satisfied an average of 41% of the methodological quality (MQ) criteria; MQ score was not associated with any outcome ($P > 0.05$). Yoga improved glycemic outcomes and other risk factors for complications in adults with T2DM relative to a control condition. Additional studies with longer follow-ups are needed to determine the long-term efficacy of yoga for adults with T2DM.

Wellsandt E, Golightly Y. Exercise in the management of knee and hip osteoarthritis. Curr Opin Rheumatol. 2017 Dec 14.

Abstract:

Purpose of review: This review focuses on studies published during July 2001 to August 2017 of exercise as an intervention in knee and hip osteoarthritis, including its influence on an array of patient outcomes.

Recent findings: Studies continue to illustrate the efficacy of exercise in treating and managing osteoarthritis, with current literature more focused on the knee compared with the hip joint. Both traditional (e.g. strength, aerobic, flexibility) and more nontraditional

(e.g. yoga, Tai Chi, aquatic) training modes improve patient outcomes related to joint symptoms, mobility, quality of life, psychological health, musculoskeletal properties, body composition, sleep, and fatigue. Exercise that is adequately dosed (e.g. frequency, intensity) and progressive in nature demonstrated the greatest improvements in patient outcomes. Supervised, partially supervised, and nonsupervised interventions can be successful in the treatment of osteoarthritis, but patient preference regarding level of supervision and mode of exercise may be key predictors in exercise adherence and degree of outcome improvement. A topic of increasing interest in osteoarthritis is the supplementary role of behavior training in exercise interventions.

Summary: Osteoarthritis is a complex, multifactorial disease that can be successfully managed and treated through exercise, with minimal risk for negative consequences. However, to have greatest impact, appropriate exercise prescription is needed. Efforts to achieve correct exercise doses and mitigate patient nonadherence are needed to lessen the lifelong burden of osteoarthritis.

Wolff M, Brorsson A, Midlov P, Sundquist K et al. Yoga: A laborious way to well-being: patients' experiences of yoga as a treatment for hypertension in primary care. Scand J Prim Health Care. 2017 Dec;35(4):360-368.

Abstract:

Objective: The aim of the study was to describe patients' experience of yoga as a treatment for hypertension, as well as their experience of living with hypertension.

Design: Qualitative interview study Method and materials: In 2013-2014, in southern Sweden, patients with hypertension from three health care centres were invited to participate in a randomised controlled trial on yoga for hypertension. After completion of the study, eight women and five men (aged 35-79), who had practiced the yoga intervention, were interviewed about their experiences. We used a semi-structured interview guide according to Kvale. Qualitative analysis was conducted by systematic text condensation inspired by Malterud.

Results: Two main themes emerged during the analysis process: Yoga - a laborious way to well-being and hypertension - a silent disease. The positive experiences of doing yoga were described in terms of tranquillity and increased agility. The drawbacks were mainly linked to the time required to perform the exercises. Living with high blood pressure and having to take medication can imply a stigma and cause concerns for future cardiovascular events. Most patients that we interviewed expressed a wish to find alternative ways to treat their high blood pressure. Participating in the yoga study was seen as a good possibility to try such an alternative way.

Conclusions: Many patients with hypertension in Swedish primary care seem to be interested in trying alternative treatments to control blood pressure. The patients in our study experienced several benefits from doing yoga, but they also pointed out difficulties in implementing yoga as a regular and permanent lifestyle change.