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 sincere acknowledge the cooperation of Mrs. Nisha Adhikari, DEO in compiling this bulletin.

(Meenakshi Bhatia)
Librarian

Abstract:

Background: Chronic obstructive pulmonary disease (COPD) is a progressive lung disorder in which airflow is obstructed. Viral or bacterial upper respiratory tract infections (URTIs) may lead to exacerbations. Homeopathic medication administration to COPD patients during the influenza-exposure period may help to reduce the frequency of common URTIs.

Methods: This prospective, observational, multicenter study was carried out in Cantabria, Spain. Patients with COPD were divided into two groups: group 1 received conventional treatment + homeopathic medication (diluted and dynamized extract of duck liver and heart; Boiron) (OG); group 2 received conventional treatment only (CG). The primary endpoint was the number of URTIs between the 4-5 months follow up (mean 4.72 ± 0.96) from basal to last visit. Secondary endpoints included the duration of URTIs, number and duration of COPD exacerbations, use of COPD drugs, changes in quality of life (QoL), compliance, and adverse events (AEs).

Results: 219 patients were analyzed (OG = 109, CG = 110). There was a significant reduction in mean number of URTIs during the follow-up period in OG compared to CG (0.514 ± 0.722 vs. 1.037 ± 1.519, respectively; p = 0.014). Logistic regression analysis showed a 3.3-times higher probability of suffering ≥2 URTI episodes in CG (p = 0.003, n = 72). OG patients having ≥1 URTI also had a significant reduction in mean URTI duration per episode (3.57 ± 2.44 days OG vs. 5.22 ± 4.17 days CG; p = 0.012). There was no significant difference in mean number of exacerbations, mean duration of exacerbations, or QoL between OG and CG. There was a greater decrease in proportion of patients using corticosteroids for exacerbations between baseline and visit 2 in OG compared to CG (22.1% vs. 7.5% fewer respectively, p = 0.005). Exacerbator phenotype patients had a significant decrease in number of URTIs (0.54±0.72 vs. 1.31±1.81; p = 0.011), and fewer COPD exacerbations (0.9 ± 1.3 vs. 1.5 ± 1.7; p = 0.037) in OG vs. CG, respectively.

Conclusions: Homeopathic medication use during the influenza-exposure period may have a beneficial impact at reducing URTIs' number and duration in COPD patients and at reducing the number of COPD exacerbations in patients with the exacerbator phenotype. Further studies are needed to
confirm the effects observed in this study.


Abstract:

A questionnaire study was conducted among 131 veterinarians practicing in the city of Medellin, Colombia, to assess views on pain evaluation and management in dogs and cats. When pain recognition and quantification abilities were used as a perceived competence of proper pain assessment, only 83/131 (63.4%, confidence interval (CI) 0.55⁻0.72) were deemed to have satisfactory skills, with the rest considered to be deficient. There were 49/131 (37.4) veterinarians who had participated in continuing education programs and were more confident assessing pain, with an odds ratio (±standard error) of 2.84 ± 1.15 (p = 0.01; CI 1.27⁻6.32). In addition, the odds of using pain scales was 4.28 ± 2.17 (p < 0.01, CI 1.58⁻11.55) greater if they had also participated in continuing education programs. The term multimodal analgesia was familiar to 77 (58.7%) veterinarians who also claimed to use more than one approach to pain control. Nevertheless, homeopathy was the preferred alternative approach in 71/77 (92%). There were major misconceptions on side effects and/or contraindications for use of opioids and non-steroidal anti-inflammatory drugs (NSAIDs) by most veterinarians. In addition, the lack of multimodal analgesia by at least 40% of the practitioners, combined with heavy reliance on weak analgesics (i.e., tramadol) or those with no proven record of efficacy (homeopathic remedies), denotes major deficits in education at the undergraduate level and a need for additional continuing education designed to fulfill the gaps in knowledge identified in this study, and overcome ideological convictions not supported by scientific evidence.


Abstract:

Background: Regulatory affairs play a crucial role in the pharmaceutical industry and are incorporated in all stages of drug development.

Objective: Approval criteria practices were developed as a resolution of the government’s desire to create policies to protect public health by controlling the safety and efficacy of merchandise in areas including pharmaceuticals, complementary color medicines, veterinary medicines, medical devices, and even food products and cosmetics.
**Method:** Herbal health products are in practices in all parts of the world under either their legal system's or expert council's or agencies' guides. They include botanicals, health supplements, health foods, complimentary medicines, traditional medicines or following pathies like Ayurveda, Yoga, Unani, Siddha, and Homeopathy. The requisite parameters for registration or recognition of products by various major global regulatory agencies were reviewed, and compiled under purview.

**Results:** In India, licensing these products is under the act provisions and the rules known as the Drugs and Cosmetics Act, whereas globally regulatory provisions follow the guidelines of developed countries like the U.S. Food and Drug Administration, European Medicines Agency, the Therapeutic Goods Act, or the World Health Organization's regulations for herbal products.

**Conclusions:** The present communication highlights the provisions of regulatory and/or licensing requirements related to corporates, product composition, specifications, quality parameters, manufacturing methodology, stability, safety, preclinical studies, clinical studies, etc. for herbal products and the respective guidelines at one site. Highlights: Ultimately, all regulatory agencies across the world highlight majorly the safety and thereafter the efficacy for any products under the category.


**Abstract:**

In the current scenario of medical sciences, homeopathy, the most popular system of therapy, is recognized as one of the components of complementary and alternative medicine (CAM) across the world. Despite, a long debate is continuing whether homeopathy is just a placebo or more than it, homeopathy has been considered to be safe and cost-effectiveness therapeutic modality. A number of human ailments ranging from common to serious have been treated with homeopathy. However, selection of appropriate medicines against a disease is cumbersome task as total spectrum of symptoms of a patient guides this process. Available data suggest that homeopathy has potency not only to treat various types of cancers but also to reduce the side effects caused by standard therapeutic modalities like chemotherapy, radiotherapy or surgery. Although homeopathy has been widely used for management of cancers, its efficacy is still under question. In the present review, the anti-cancer effect of various homeopathic drugs against different kinds of cancers has been discussed and future course of
action has also been suggested.


Abstract:

Background: The plant Cajanus cajan had earlier shown protective effect against hypoxic-ischemic brain damage in rats.

Objective: Hence, hydroalcoholic extract of C. cajan Linn leaves (HECC) was evaluated for its protective role against memory impairment in sleep-deprived Sprague Dawley rats.

Materials and Methods: Adult rats were divided into five groups each consisting of 5 rats (n = 5). Groups I, II, III, IV and V received 1 mL/kg 1% CMC, 1 mL/kg 1% CMC, 200 mg/kg HECC, 400 mg/kg HECC and 200 mg/kg piracetam respectively as per b.wt. orally everyday for 14 days. Animals of every groups except group-I were subjected to sleep-deprivation from 15th to 19th day for induction of memory impairment. Behavioral activities i.e., elevated plus maze test and locomotor activity were evaluated. Afterwards, brain was isolated from the sacrificed animals for biochemical investigation of acetylcholinesterase (AChE); antioxidant activities i.e., catalase (CAT), superoxide dismutase (SOD), lipid peroxide; and histopathological changes.

Results: The percent number of entries, number of entries in open arm, AChE activity, lipid peroxide activity of HECC-treated group-III and group-IV were significantly (p < 0.01) decreased while, their CAT and SOD activities were significantly (p < 0.01) increased in dose-dependent manner as compared to sleep-deprived group-II. The activities of group-IV were almost significantly equivalent to that of piracetam-treated group-V. Protective effect of HECC was well supported with brain’s histopathology.

Conclusion: HECC possesses a protective effect against memory impairment indicating its therapeutic efficacy against memory loss as in Alzheimer’s disease. Probable underlying mechanisms may be brain’s AChE inhibition and increased antioxidant potential by HECC.

Abstract:

Visphota kushta (blistering skin disease) is characterized by transparent blisters with thin skin covering. Management of Visphota Kushta in Ayurveda is rarely reported. The case reported here showed significant regression in the condition in short span of time and could completely stop the use of anti histamines and corticosteroids. A 32 year old female, presented with complaints of blisters over both upper and lower extremities associated with edema, burning sensation, pain, severe itching and oozing since three months. The treatments were given after ascertaining the involved dosha and the samprapti (pathogenesis). The involved dosha were and Pitta (metabolic factor) and Kapha (binding factor) dosha. Pitta - kapha dosha hara line of treatment was adopted in terms of mitigating and purificatory therapy. It helped in arresting the progression of the condition and a complete healing of blisters. Photographs were taken during and after the treatment for records. The blister completely resolved and the skin was normal as before. The patient was back to her normal routine with no signs of relapse. The outcome was a combined effect of both shamana and shodhana chikitsa along with pathya sevana.


Abstract:

Background: Entada phaseoloides is a well-known medicinal plant traditionally used in Ayurvedic medicine for centuries.

Objective: To evaluate the anti-stress activity of seeds of E. phaseoloides in endoplasmic reticulum stress during chronic restrain stress in mice, based on our preliminary screening.

Materials and Methods: Mice (n = 6/group) were restrained daily for 6 h in 50 ml polystyrene tubes for 28 days. Methanolic extract of E. phaseoloides (MEEP) (100 and 200 mg/kg, p.o.) and standard drug, imipramine (10 mg/kg i.p.) were administered daily 45 min prior to restrain from day 22-28. Then, forced swim test (FST) was performed to assess despair behavior. Lipid peroxidation (LPO) and antioxidant enzymes Reduced glutathione (GSH), Superoxide dismutase (SOD) were measured in the hippocampus of mice. 78 kDa Glucose-regulated Protein, 94 kDa Glucose-regulated Protein, C/EBP homologous protein, Caspase-12 expression were quantified by Real Time PCR.

Results: MEEP significantly reduced the immobility time in FST (P < 0.001). Significant reduction of LPO (P < 0.05) level and restored antioxidant enzymes
viz. GSH (P < 0.001) and SOD towards vehicle control group were observed. Down-regulation of genes GRP 78, GRP 94 (P < 0.001), CHOP and Caspase-12 (P < 0.001) as compared to the chronic restrain stress group was evident, which were upregulated following treatment. Isolation of the active components of the seeds revealed the presence of Oleic acid (1), Entadamide A (2), Entadamide A-beta-d-glucopyranoside (3) and 1-O-protocatechuoyl-β-d-glucose.

**Conclusion:** MEEP altered endoplasmic reticulum stress in chronic restrain stressed mice; however, as an antidepressant it showed a weaker response.


**Abstract:**

The present paper attempts to study the revitalisation of Ayurveda in Colonial Tamil region and the contributions of Pandit Srinivasa Narayana Iyengar in the movement. Western medicine was introduced initially for benefit of Europeans in British India and later extended to the Indian population was a 'tool' of empire. Gradually, Colonial government and practitioners of Western medicine stigmatised Ayurveda as irrational, dangerous and superstitious medicine and strove to marginalise it in the government policies and public sphere which paved the way to get cultural domination over colonised. As a result, physicians of Ayurveda attempted to revitalise their medicines through professionalization, systematisation and standardisation. Besides, they instituted printing presses and published numerable tracts, pamphlets, journals and books to counter the hegemony of Western medicine. In this contest, the meanings and boundary of Ayurveda were reconfigured and medical practices (written in regional languages) which did not fit into newly constructed medical identity - Ayurveda, were marginalized from the boundary of Ayurveda though they were part and parcel of the system until the late nineteenth century. As a response, an alternative medical identity - Tamil Siddha Medicine - was constructed by Tamil physicians in Colonial Tamil region. In this milieu, the present study traces the valuable contributions of Pandit Srinivasa Narayana Iyengar in promoting Ayurveda and solving the disputes among Sanskrit Ayurveda and Tamil Siddha practitioners in colonial Tamil region.

Abstract:

Sphaeranthus indicus whole herb is included as a Rasayana drug in Ayurveda and is reported for the treatment of epilepsy. S. indicus flowers have anxiolytic, hypotensive, peripheral vasodilatory and cathartic activity. The objective of this study was to evaluate the anticonvulsant activity of the extract of flowers of S. indicus in various animal models of epilepsy. The anti-epileptic activity of Methanolic extract (ME) and Acetone extract (AE) of the flowers was evaluated using Maximal electro shock (MES) seizures, Pentylenetetrazole (PTZ) induced convulsions and Picrotoxin induced convulsions. ME (50 mg/kg and 100 mg/kg) and AE (100 and 200 mg/kg respectively) protected animals against PTZ and Picrotoxin induced convulsion but did not have any effect against MES induced convulsion. In conclusion, the results of this study suggest that both the ME and AE possess promising anticonvulsant activity. It is further suggested that the flavonoids in the extract by the virtue of their effect on benzodiazepine site of GABA receptor, might be responsible for the effect, although no study is undertaken to prove this aspect. Nevertheless, the study provides pharmacological credibility to the anti-epileptic use of S. indicus suggested in Ayurveda.


Abstract:

Background: Anu Tailam, an Ayurvedic medicated oil where 'anu' meant for atom and 'tailam' meant for oil and virtually meant for 'oil of subtle or atomic size particles'. Since the major active ingredients in this formulation are incorporated from the polyherbal decoction, it is expected to contain predominantly water soluble ingredients.

Objectives: It is hypothesized that these polar active botanical ingredients are present in the formulation should be either suspended in the form of submicron particles or entrapped in the submicron vesicular structures since the formulation did not show any precipitation or phase separation instead showed a monophasic oily liquid with very little moisture.

Materials and Methods: In the present investigation, the micro architecture of the anu tailam is studied via column chromatography and high performance thin layer chromatography to prove the contents are polar hydrophilic compounds followed by optical microscopy, photon correlation Spectroscopy (PCS) and environmental scanning electron microscope (ESEM) to study the
Results: In this study, it was proved that the formulation contained only polar ingredients and can be extracted in polar solvents like methanol and ethanol. It was also found that the formulation taken for study contained nano particles of the active botanical ingredients embedded in a network of vesicular structures of the lipid base.

Conclusion: The selected Ayurvedic formulation 'anutailam' found to contain novel nano drug delivery system to deliver water soluble ingredients across barriers.


Abstract:

Background: Currently, no vaccines or modern drugs are available for dengue and chikungunya and only symptomatic relief is provided to the patients. Siddha medicine, a traditional form of indigenous medical system uses specific polyherbal formulations for the treatment of such infections with considerable success. One such polyherbal formulation for the treatment of chikungunya and dengue is Nilavembu kudineer (NVK). The mechanistic details of this drug as an antiviral for chikungunya virus (CHIKV) and dengue virus (DENV) is poorly understood.

Objectives: The current study was undertaken to study the efficacy of NVK as an antiviral formulation against CHIKV and DENV.

Materials and Methods: Cytotoxicity assays (MTT) were performed to determine the role of NVK as an antiviral during chikungunya and dengue infections in the following conditions-i). post infection, ii). during active infections and iii) protective, not allowing virus infection.

Results: It was observed that NVK provides protection against CHIKV and DENV-2 during active infection as well can help to prevent virus infection in the cells and it mainly depends on the cellular availability of drugs for maximum protection against both the infections.

Conclusion: Our study establishes that extraction protocols are important to ensure maximum efficacy of NVK along with the time of addition of the drug during CHIKV and DENV infections in the cells. This study provides insights to the possible mode of action of NVK in in vitro condition during CHIKV and
DENV infection.


**Abstract:**

**Background:** Arsenic is an environmental contaminant of global concern. Consumption of ground water contaminated with inorganic arsenic (iAs) continues to be the major source of its exposure. The developing nervous system is especially vulnerable to environmental insults due to its higher rate of oxygen consumption and provision of weaker antioxidant (AOX) machinery.

**Objective:** Since oxidative stress has been reported as one of the major factors underlying iAs induced toxicity, the aim of the present study is to study the effect of two AOXs i.e., Alpha Lipoic Acid (ALA) and Curcumin (Cur) in developing cerebellum of rats exposed to arsenic during postnatal period.

**Materials and Methods:** The study was carried out on mother reared neonatal rat pups grouped as normal (Ia) and sham (vehicle) controls (Ib,c,d), while the experimental groups IIa/ IIb received sodium arsenite (NaAsO2) [(1.5/2.5 mg/kg body weight (bw)] alone or along with ALA (70 mg/kg bw) - IIIa/ IIIb or along with Cur (150 mg/kg bw)- IVa/ IVb. Behavioural, biochemical and immunohistochemical procedures were carried out to understand the underlying mechanisms.

**Results:** The observations indicated deficits in locomotor function, accumulation of iAs, increased levels of oxidative stress markers along with downregulation of the expression of proteins closely associated with synaptic functioning (Synaptophysin and Postsynaptic density protein95) in the cerebellum of iAs treated animals. Substantial recovery in all these parameters was observed in AOX co-treated groups.

**Conclusion:** Our results support the potential of ALA and Cur in amelioration of iAs induced developmental neurotoxicity. ALA and Cur can be proposed as dietary adjuvants amongst populations inhabiting areas with high iAs contamination as a safe and cost effective antidotes.

Abstract:

Background: Abrus precatorius Linn. (Kunch in Bengali) is widely spread in tropical and sub-tropical regions. It is a typical plant species which is well-known simultaneously as folk medicine and for its toxicity.

Objective: Phytoceutical investigation of the white variety seeds of Abrus precatorius Linn.

Method: Traditional extraction, separation, isolation, and purification processes were followed. The structure was elucidated by various spectral analyses and the solid-state structure of this indole-alkaloid has been determined by X-ray crystallographic analysis. Docking interactions of L-abrine have been studied against ten major proteins, responsible for various types of cancers. In silico studies were done by Schrödinger Maestro, AutoDock4, PyMOL and AutoDock Vina. The protein structures were downloaded from Protein Data Bank. Sulforhodamine B (SRB) colorimetric assay was used for in vitro anticancer evaluation against four human cancer cell lines.

Results: An indole-containing unusual amino acid alkaloid has been isolated from the white variety seeds of Abrus precatorius Linn. In silico docking studies demonstrated significant antiproliferative activity against four human cancer cell lines.

Conclusion: The solid-state zwitterion structure of the indole-containing alkaloid (α-methylamino-β-indolepropionic acid, L-abrine) has been confirmed for the first time by X-ray crystallography. Highly promising in silico and in vitro results indicate that L-abrine may find its space in future anticancer drug discovery research.


Abstract:

Neti kriya is an integral part of shatkarmas/the six cleansing techniques that form the most important aspect of hatha yoga. Neti helps in preventing and managing upper respiratory tract diseases. An attempt is being made to collate and review articles that highlight the therapeutic effects of neti kriya. Databases like PubMed (January 1980-April 2016), Scopus and Ayush Portal were searched. We used keywords like jala neti, neti kriya, neti combined with terms such as yoga, sinusitis, rhinitis, common cold, vision, snoring, nasopharyngeal carcinoma and mental health for the search. As only a few results were obtained, we reviewed relevant studies with saline nasal irrigation.
Evidence emerging from this review suggests that neti offers manifold benefits and relief from the antibiotic grip. Most studies support the role of neti in treating sinusitis, rhinosinusitis, allergic conditions and in improving vision. Jala neti has a significant role in improving the presence of mind and intelligence. We identified that it can be applied in mitigating post irradiation rhinosinusitis in nasopharyngeal carcinoma. However, randomized control trials must be conducted to substantiate the therapeutic efficacy of this simple cost-effective, non-pharmacological mode of treatment.


Abstract:

Ulcerative Keratitis is a sight-threatening corneal infection. It is one of the most common global causes of irreversible blindness due to corneal diseases. This case report highlights the potential of Ayurvedic management in nonresponding ulcerative keratitis. A 20 year old boy came to the outpatient department with redness, discharge, photophobia and defective vision in the right eye since 4 months following a foreign body injury. He was treated at leading ophthalmic hospital for keratitis but due to poor response was suggested keratoplasty and the patient had opted for Ayurvedic treatment. He was initially treated in the OPD and since he started responding well to treatment, he was admitted in the hospital. He underwent Jaloukavacharana, Snehapana, Virechana, Nasya, Anjana, Tarpana and Putapaka. He was completely relieved of pain, redness, discharge, photophobia. His BCVA was hand movements at the time of the first visit and it improved to 6/24 at the time of discharge. Ayurveda has an important role to play in infective eye diseases which needs to be explored scientifically.


Abstract:

Background: Guggulutiktaka ghritam is an ayurvedic medicine which has been traditionally used to treat various chronic inflammatory conditions. However, the mechanism of action of the Ayurvedic medication in control of inflammatory conditions has not been clearly evaluated.

Objective: In the current study, the effect of the Guggulutiktaka ghritam extract (GTG) on the lipoxygenase pathway and in the production of
proinflammatory cytokines involved in the pathogenesis of chronic inflammation was studied.

**Materials and Methods:** The effect of GTG in the production of leukotriene was determined by enzyme inhibition studies on 12- lipooxygenase. The assay was carried out by ferrous oxidation of xylenol orange (FOX assay) and was compared to a positive control nordihydroguaiaretic acid. The effect of GTG on the production of proinflammatory cytokines TNF-α and IL-1β in monocytes were studied. For this, the monocytes were pretreated with various concentrations of GTG and subsequently stimulated with lipopolysaccharide. The cytokines TNF-α and IL-1β produced were quantified by ELISA and the results were compared to positive controls Rolipram and Dexamethasone respectively. The gene expression studies were carried out using qRT-PCR. The IC50 values were calculated and evaluated statistically.

**Results:** The result indicates that GTG in comparison to the positive control Nordihydroguaiaretic acid significantly reduced the activity of 12- lipooxygenase. Also, there was significant inhibition in the production of proinflammatory cytokines in LPS stimulated monocytes pretreated with GTG as compared to positive control Rolipram and Dexamethasone. There was significant downregulation of IL-1β gene in LPS stimulated monocytes pretreated with GTG as compared to control. These changes are further supported by Raman spectra obtained for GTG treated and untreated cells.

**Conclusion:** The study revealed that GTG is a leukotriene and cytokine inhibitor. The inhibition in the production of cytokines may be due to the down-regulation of genes for TNF-α and IL-1β. The study provides a scientific validation on the possible anti-inflammatory mechanism of action of this traditionally used medicine. Identification of bioactive molecules would aid in developing newer therapeutics for control of chronic inflammation.


**Abstract:**

**Background:** Viscum articulatum Burm. (Family: Loranthaceae) is commonly known as mistletoe. In ayurveda, the plant parts are used in "Kapha", "Vata", diseases of the blood, ulcer, and epilepsy. The plant parts are also used in urinary tract infection and wound infection. The plant contains five triterpenoids such as α-amyrin, lupeol, betulin, betulinic acid and oleanolic acid, exhibiting several pharmacological activities including antimicrobial, anti-
Objective: To ensure the content of uniformity of oleanolic acid, a RP-HPLC method has been developed for estimation of oleanolic acid in V. articulatum aerial part.

Material and methods: The RP-HPLC method was carried out in reverse phase C18 column, using methanol and water as mobile phase in the ratio of 95:5 (v/v), at the flow rate of 1 mL/min. The pH of aqueous phase was adjusted 3.2 with 1% (v/v) glacial acetic acid. The λmax was set at 210 nm.

Results: The retention time of oleanolic acid was found at 21.5 ± 0.05 min. The linearity of the response was found to be 10-800 μg/mL. The coefficient of determinants of oleanolic acid was found to be (r²) 0.995 and equation Y = 19462X + 16,172. The LOD and LOQ were found to be for oleanolic acid (1.96% w/w) 0.197 ± 0.63 and 0.623 ± 0.87 μg/mL, respectively. The developed method was accurate, specific, precise and reproducible.

Conclusion: This RP-HPLC may be useful for quantitative estimation of the chemical constituents present in the plant extract as well as the quality assessment of the herbal product.


Abstract:

Background: Increasing prevalence of type 2 diabetes mellitus (DM) has become alarming, burdening health care systems throughout the world. Prediabetes is an intermediate step before manifestation of full blown DM. Effective intervention at this step would help stop/slow progression to DM.

Objective: This study aimed at use of a polyherbal combination (PDBT - constituted of Tinospora cordifolia, Pterocarpus marsupium, Gymnema sylvestre, Zingiber officinale and Momordica charantia) along with life style modification compared to a placebo in prevention of DM among prediabetic individuals.

Materials and Methods: The study was a double blinded, placebo controlled randomized clinical trial. Participants were divided in to a group on PDBT and life style management (LSM) and second on placebo and LSM. Participants in the intervention group received 2 gm/day of PDBT. All participants received the intervention for a period of 6 months.
Results: One hundred and fourteen participants were enrolled in the study, 57 each in intervention and control group. At the end of the study, 8 participants from the intervention group, compared to 15 participants in the control group had converted to DM. There was a 47% risk reduction in the intervention group. Participants in the intervention group showed statistically significant decrease in their blood glucose level (fasting and PP), Hb1AC, fasting serum insulin and HOMA-IR values. There was no significant change in BMI. No adverse effects were reported by any participants.

Conclusion: PDBT along with LSM in prediabetic participants was associated with reduction in conversion to DM than placebo along with LSM without any adverse effects.


Abstract:

Medicine and healing have been critical elements of nation-building and governance in India. There is a clear hierarchy: biomedicine, followed by systems like Ayurveda which are to be 'mainstreamed,' and local health traditions, which are to be 'revitalised'. Mindful that power nonetheless resides in positions of marginality, this analysis drew from a health system ethnography on revitalisation of local health traditions in three southern Indian states. Data from multiple interviews with 51 healers, observations of meetings, healing sessions and events convened by healers, as well as a multi-stakeholder dialogue on local health traditions convened by authors were analysed using a grounded analytical process. The state was a source of power, but in an enmeshed, individualised form. Other sources of power included accomplished others who viewed healers and their practices with respect, healers' collectives that produced and reinforced power through the exercise of certain rituals, and the sacred calling to heal, which assumed stringent criteria for practice and training, while also creating a moral imperative for service orientation. Our study shows how power rests in or is derived from multiple sites and sources that inhere and interact in critical ways with the state and other systems of medicine.


Abstract:

In Ayurveda, Euphorbia thymifolia L. (Euphorbiaceae) prescribed in the
treatment of various ailments like bronchial asthma, cough, diarrhea and bleeding piles. The present study was investigated to evaluate antianaphylactic, mast cell stabilizing and antiasthmatic activity of methanol and aqueous extract of *E. thymifolia* (ET) on experimental animals. Anaphylaxis was induced by administration of horse serum and triple antigen vaccine intraperitoneal (i.p.) in albino Wistar rats. Extracts of ET were administered to the rats in dose of 250 and 500 mg/kg orally for 14 days. At the end of treatment, asthma score was measured and various blood parameters like differential count (DC), total WBC count and IgE were estimated. Interleukin (IL)-4, IL-5 and TNF-α were measured by ELISA commercial kit from BALF. Histopathological changes of lungs were observed. Antiasthmatic activity of extracts of ET was also studied on histamine-induced bronchospasm in guinea pigs. *In vitro* mast cell stabilizing activity of extracts was evaluated on compound 48/80 challenged rat intestinal mesenteric mast cells. The treatment with extracts of ET produced significant decrease in asthma score and they also brought to normalcy the increased total WBC, DC counts, serum IgE, TNF-α, IL-4 and IL-5 in BALF. The histopathological study further supported the protective effect of ET extracts. The pretreatment with extracts of ET displayed significant reduction in degranulation of mesenteric mast cell numbers. The treatment with extracts of ET significantly increased in time of PCD. Thus, these findings concluded that *E. thymifolia* could be effectively used in the treatment of anaphylaxis and asthma.


**Abstract:**

Psyllium husk or isabgol contains xylan backbone linked with arabinose, rhamnose, and galacturonic acid units (arabinoxylans). In this study, we demonstrate the fabrication and characterization of a macroporous three-dimensional (3D) composite scaffold by mixing psyllium husk powder (PH) and gelatin (G) in different ratios, viz.100 PH, 75/25 PH/G, and 50/50 PH/G (w/w), using an EDC-NHS coupling reaction followed by freeze-drying method. The reaction was performed in aqueous as well as in alcoholic media to determine the most appropriate solvent system for this purpose. The mechanical strength of the scaffold system was improved from 151 to 438 kPa. The fabricated scaffolds exhibited enhanced structural stability, remarkable swelling capacity, and escalated cell growth and proliferation. ATR-FTIR analysis showed the presence of amide and ester bonds indicating covalent crosslinking. SEM micrographs revealed the porous nature of the scaffolds with pores ranging from 30 to 150 μm, and further pore size distribution curve indicated that 75/25 PH/G (w/w%) EDC-NHS-alcohol scaffold exhibited the best fit to the
Gaussian distribution. Swelling capacity of the 100 PH EDC-NHS-alcohol scaffolds was found to be nearly 40% from its original weight in 48 h. MTT assay using fibroblast cells revealed ~80% cellular proliferation by 6th day within the fabricated scaffolds in comparison to control. 


Abstract:

Background: The ethnic groups in Gilgit-Baltistan have been utilizing local resources in their centuries-old traditional healing system. Most tribes within these ethnic groups still rely on traditional healing systems. We aim to understand the current status, uses, and abundance of medicinal plants, associated traditional knowledge, and trade.

Materials and Methods: The study incorporated over 300 local community members (70% men and 30% women) in focused group discussions, semi-structured interviews, and homework assignments for 8th to 12th grade students to document traditional knowledge (TK) in six districts in Northeast Pakistan. We calculated various indices such as informant consensus factor, use value, relative frequency of citation, and CoKriging. These indices, along with repetitively used medicinal plants, were used to analyze differences in studied locations.

Results: Most of the community members still rely on traditional medication in the study areas. However, we found the highest number of medicinal plants used in Skardu and Gilgit compared to other districts and these two districts also represent trade centers and a highly populated area regarding medicinal plants. Results indicate connection amongst the surveyed villages signifying mixing of knowledge from different sources, with certain areas more influenced by traditional Chinese medicine and others more by Ayurveda and Unani.

Conclusion: TK is mostly retained with elder community members; however, those directly linked with market value chain retain rich knowledge on traditional use of the medicinal plants from the region. Major trade centers in the region also coincide with a high density of medicinal plant occurrence, knowledge, and higher utilization. Therefore, with the increasing trade in medicinal plant in the region, there is potential for rejuvenation of this knowledge and of plant use in the region.

Sharma AK, Pundarikakshudu K. Regulatory Aspects of Traditional Indian Medicines (TIM) in India and in International Purview. J AOAC Int. 2019
Abstract:

**Background:** Regulatory affairs play a crucial role in the pharmaceutical industry and are incorporated in all stages of drug development.

**Objective:** Approval criteria practices were developed as a resolution of the government’s desire to create policies to protect public health by controlling the safety and efficacy of merchandise in areas including pharmaceuticals, complementary color medicines, veterinary medicines, medical devices, and even food products and cosmetics.

**Method:** Herbal health products are in practices in all parts of the world under either their legal system’s or expert council’s or agencies’ guides. They include botanicals, health supplements, health foods, complementary medicines, traditional medicines or following pathies like Ayurveda, Yoga, Unani, Siddha, and Homeopathy. The requisite parameters for registration or recognition of products by various major global regulatory agencies were reviewed, and compiled under purview.

**Results:** In India, licensing these products is under the act provisions and the rules known as the Drugs and Cosmetics Act, whereas globally regulatory provisions follow the guidelines of developed countries like the U.S. Food and Drug Administration, European Medicines Agency, the Therapeutic Goods Act, or the World Health Organization’s regulations for herbal products. Conclusions: The present communication highlights the provisions of regulatory and/or licensing requirements related to corporates, product composition, specifications, quality parameters, manufacturing methodology, stability, safety, preclinical studies, clinical studies, etc. for herbal products and the respective guidelines at one site. Highlights: Ultimately, all regulatory agencies across the world highlight majorly the safety and thereafter the efficacy for any products under the category.


Abstract:

**Background:** Laghu Sutashekhara Rasa (LSR) is a herbo mineral formulation containing Shuddha Gairika (Fe2O3) and Shunthi (Zingiber officinale Roxb.) with the levigation of Nagawalli Swarasa (fresh juice of Piper betel Linn.) prepared as per the reference of Rasatarangini Parishistha. This is an important formulation in Ayurveda therapeutics, but its shelf life is not
evaluated till date. The Govt. of India Gazette specifies the shelf life of various Ayurvedic medicines. However, there is a need to revalidate the shelf life of individual formulations by following parameters prevalent in respective scenario. Considering this, it was planned to evaluate shelf life of Laghu Sutashekhara Rasa.

**Materials and methods:** LSR was prepared in the Pharmacy, Gujarat Ayurved University, Jamnagar following classical guidelines. The samples were subjected to accelerated stability study maintaining temperature and humidity 40 ± 2 °C and 75 ± 5% respectively. Relevant analytical parameters were analyzed at an interval of 0, 1, 3 and 6 months to check the degradation levels in the formulation.

**Result:** Product was free from microbial contamination and heavy metals were within the prescribed limits. There were insignificant changes in physico-chemical profiles at different intervals of analysis. On extrapolation of the observations, the shelf life of Rasayoga was found to be 2 years and 8 months.

**Conclusion:** The shelf life of LSR was found to be less than the given standards in official gazettes of Govt. of India. This decreased shelf life may be because of the predominantly (Approximately 70%) herbal component present in the formulation.


**Abstract:**

Ayurveda, an Indian medical science has been practiced for thousands of years. What makes Ayurveda relevant today is its subtle understanding of the environment and its focus on the generation of good health through one’s own lifestyle choices. The digestive system has long been an area of critical importance within the Ayurvedic system and is only now being acknowledged by modern science as a key component in the regulation of physical and mental well-being. The gut microbiome and enteric nervous system are two particular areas in which the onset of psychiatric disorders, such as depression, have been associated. There are some striking similarities between this biomedical understanding of the gastrointestinal system and the Ayurvedic perspective of disease development. Major Depressive Disorder (MDD) is becoming increasingly linked with gut dysregulation in contemporary literature and is a pathology explored within both the Ayurvedic and Western systems of medicine. This literature review seeks to draw parallels between
these two areas of study and highlight the importance of the digestive system when diagnosing and treating MDD.


Abstract:
Guillain-Barre syndrome (GBS) is a severe acute paralytic neuropathy with rapid progression usually occurring post infections. Inspite of the active medications it is associated with severe weakness, incomplete recovery and pain. Long disease course can cause autonomic dysfunction or deterioration in general health and life threatening complications like respiratory failures. Current case was diagnosed as GBS with motor, sensory & sphincter disturbance. Ayurveda diagnosis of Sarvangavata was made and customized treatment strategy was planned. First part of Kapha pitta samrushtavata (Vatadosha associated with Kapha and Pitta dosha) and then vatahara chikitsa were followed. Treatments were Koshta shodhana (gut cleansing), Abhyanga (massage of whole body with medicated oil), Ksheera parisheka (dripping of medicated milk over body), Shastikashali panda sweda (Rubbing of medicated rice poultice over body), Anna lepa (application of medicated rice over the body), Shirotalam (trans cranial drug administration by applying medicines over scalp), Basti (trans rectal administration of medicines) and Oral medicaments. Panchakarma treatments were for 14 days followed by oral medications for next 151 days. Intervention period of 165 days showed complete recovery of all the motor, sensory & sphincter deficits however follow up of the patient was maintained for 437 days looking in to the sustainability of the outcomes.


Abstract:

Background: Facial redness is multifactorial in nature and may be a sign of many different conditions, including rosacea, photo damage and flushing. Herbal medicines have been used for thousands of years to treat a variety of dermatological conditions. Turmeric (Curcuma longa) and its constituents have been shown to mediate dilation and constriction of peripheral arterioles and have demonstrated anti-oxidant, anti-inflammatory and wound-healing properties.
**Objective:** To investigate the effects of turmeric and turmeric-containing polyherbal combination tablets versus placebo on facial redness.

**Design, setting, participants, and interventions:** This was a prospective, double-blind, randomized pilot study. Thirty-three healthy participants were recruited from the dermatology clinic at the University of California, Davis and nearby community from 2016 to 2017. Thirty participants were enrolled, and 28 participants completed the study. The enrolled participants were randomized to receive one of three interventions (placebo, turmeric or polyherbal combination tablets) and were told to take the intervention tablets by mouth twice daily for 4 weeks. Facial redness was assessed at baseline and 4 weeks after intervention by clinical grading and by image-based analysis.

**Main Outcome Measures:** The primary outcome measure was image-based facial quantification of redness using a research camera and software analysis system. The investigators performed an intention-to-treat analysis by including all subjects who were enrolled in the trial and received any study intervention. Differences were considered statistically significant after accounting for multiple comparisons. Effect sizes for clinical grading were calculated with a Hedges' g where indicated.

**Results:** Twenty-eight participants completed the study and there were no reported adverse events. Based on clinical grading, facial redness intensity and distribution trended in the polyherbal combination group after 4 weeks ($P = 0.1$). Under photographic image analysis, the polyherbal combination group had a significant decrease in redness of 40% compared to baseline ($P = 0.03$). The placebo and turmeric groups had no statistically significant changes in image analysis-based facial redness.

**Conclusion:** Polyherbal combination tablet supplementation improved facial redness compared to the turmeric or placebo. Overall, our findings suggested further investigations into the effects of turmeric and polyherbal formulations in skin conditions associated with facial redness would be warranted.

**UNANI MEDICINE**


**Abstract:**

**Background:** Unani concept of therapeutic interchange, despite having immense practical aspect, has not been touched upon in a coherent way by most of the Unani scholars except Razi (Rhazes 865-925 AD), who took the
concept plausibly and framed rules for alternate drug prescription at the time of unavailability of the drugs of choice.

**Objective:** The Unani concept of therapeutic interchange is based on similarity in action, temperament and physical properties of drugs mainly botanicals, which are already established and need no further discussion; however, phytochemistry has not been considered a basis for substitution. Therefore, objective of this study was evaluation of the concept on phytochemical parameters as actions of most drugs are due to phytoconstituents.

**Material and Methods:** Classical Unani literature pertaining to therapeutic interchange and ethnobotanical literature for uses and phytoconstituents of three botanicals and their respective substitutes were reviewed. Ethnobotanical literature was collected from well known search engine viz., PubMed, Google Scholar, Scopus and Science direct. In view of exploring the concept on scientific basis, physicochemical, phytochemical and analytical (HPLC, GC-MS) studies were also conducted.

**Results:** The study exhibited similarity in phytoconstituents in main and substitute botanicals with insignificant differences. Direct relation between doses, actions, intensity of actions, temperament and chemical constituents of main and substitute botanicals was observed.

**Conclusion:** The study, however, seemed to validate the concept on the basis of phytoconstituents, further pharmacological studies on the basis of properties and activities is required to strengthen the concept.

Sharma AK, Pundarikakshudu K. Regulatory Aspects of Traditional Indian Medicines (TIM) in India and in International Purview. J AOAC Int. 2019 Jan 4. doi: 10.5740/jaoacint.18-0379

**Abstract:**

**Background:** Regulatory affairs play a crucial role in the pharmaceutical industry and are incorporated in all stages of drug development.

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**Method:** Herbal health products are in practices in all parts of the world under either their legal system's or expert council's or agencies' guides. They include botanicals, health supplements, health foods, complimentary
medicines, traditional medicines or following pathies like Ayurveda, Yoga, Unani, Siddha, and Homeopathy. The requisite parameters for registration or recognition of products by various major global regulatory agencies were reviewed, and compiled under purview.

**Results:** In India, licensing these products is under the act provisions and the rules known as the Drugs and Cosmetics Act, whereas globally regulatory provisions follow the guidelines of developed countries like the U.S. Food and Drug Administration, European Medicines Agency, the Therapeutic Goods Act, or the World Health Organization's regulations for herbal products. Conclusions: The present communication highlights the provisions of regulatory and/or licensing requirements related to corporates, product composition, specifications, quality parameters, manufacturing methodology, stability, safety, preclinical studies, clinical studies, etc. for herbal products and the respective guidelines at one site. Highlights: Ultimately, all regulatory agencies across the world highlight majorly the safety and thereafter the efficacy for any products under the category.

Abstract:

Background: Cardiac rehabilitation (CR) is a standard treatment for secondary prevention of acute myocardial infarction (AMI) in high income countries (HICs), but it is inaccessible to most patients in India due to high costs and skills required for multidisciplinary CR teams. We developed a low-cost and scalable CR program based on culturally-acceptable practice of yoga (Yoga-CaRe). In this paper, we report the rationale and design for evaluation of its effectiveness and cost-effectiveness.

Methods: This is a multi-center, single-blind, two-arm parallel-group randomized controlled trial across 22 cardiac care hospitals in India. Four thousand patients aged 18-80 years with AMI will be recruited and randomized 1:1 to receive Yoga-CaRe program (13 sessions supervised by an instructor and encouragement to self-practice daily) or enhanced standard care (3 sessions of health education) delivered over a period of three months. Participants will be followed 3-monthly till the end of the trial. The co-primary outcomes are a) time to occurrence of first cardiovascular event (composite of all-cause mortality, non-fatal myocardial infarction, non-fatal stroke and emergency cardiovascular hospitalization), and b) quality of life (Euro-QoL-5L) at 12 weeks. Secondary outcomes include need for revascularization procedures, return to pre-infarct activities, tobacco cessation, medication adherence, and cost-effectiveness of the intervention.

Conclusion: This trial will alone contribute >20% participants to existing meta-analyses of randomized trials of CR worldwide. If Yoga-CaRe is found to be effective, it has the potential to save millions of lives and transform care of AMI patients in India and other low and middle income country settings.


Abstract:

Background: Various complementary or alternative medicines (including breathing exercises and yoga/pranayama) have been tried as an attractive option to pharmacotherapy in childhood asthma.

Objective: To evaluate the role of breathing exercise and yoga/pranayama as
add on therapy to the "pharmacologically recommended treatment" of childhood asthma.

**Methods:** We searched the published literature through the major databases: Medline via Ovid, PubMed, CENTRAL, Embase, and Google Scholar till June 2018. Randomized trials comparing breathing exercises and yoga/ pranayama versus control or as part of a composite intervention versus control were included. The primary outcome measures were quality of life and change in asthma symptoms. Secondary outcomes were: decrease in medication use, number of exacerbations, change in lung function and immunological parameters, school absenteeism, and adverse events.

**Results:** A total of 10 trials (466 children, 6-14 years age) were included. The severity of asthma varied among the trials. The data for primary outcome measures could not be pooled, there were mixed results for both primary and secondary outcomes. No significant benefit was obtained in acute asthma, and the lung function tests [except PEFR % at 4-6 weeks, PEF absolute at 3 months, and FVC absolute at 3 months] in chronic asthma. One trial compared breathing exercise versus yoga, and found no difference. Adverse events were not significant.

**Conclusions:** Breathing exercise and yoga/ pranayama may have some additive role in the treatment of childhood asthma. However, at present it cannot be recommended as a standard of care due to insufficient data.


**Abstract:**

**Background:** Burnout and work-related stress in health-care professionals (HCPs) is a growing concern to the optimal functioning of the health-care system. Mindfulness-based interventions may be well-suited to address burnout in HCPs.

**Objective:** The purpose of this study was (1) to quantitatively evaluate the effect of a mindfulness-based intervention for interdisciplinary HCPs over time and at a long-term follow-up and (2) to explore perceived benefits, facilitators, and barriers to the practice of mindfulness at the long-term follow-up.

**Design:** A mixed-method, repeated measures, within-subjects design was used to investigate Mindfulness for Interdisciplinary HCPs (MIHP) at baseline, post-MIHP, and a follow-up (6 months to 1.5 years after MIHP). MIHP is an 8-week, group-based course for interdisciplinary HCPs and students, with weekly meditation training, gentle yoga, and discussions on the application of mindfulness to common stressors faced by HCPs. Main outcome measures were the Maslach Burnout Inventory-Health Services Survey and the Five Facet
Mindfulness Questionnaire. A semistructured interview was used to explore participants' perceptions of sustained effects and practice in the context of HCP work at the long-term follow-up. The study protocol was registered with ClinicalTrials.gov (NCT02736292).

Results: Eighteen HCPs (88% female) participated in the study. Significant reductions were found after the intervention for 2 subscales of burnout: depersonalization, F(2, 17) = 5.98, P = .01, and emotional exhaustion, F(2, 17) = 2.64, P = .10. Three facets of dispositional mindfulness showed significant increases at long-term follow-up, act aware: F(2, 15) = 4.47, P = .03, nonjudge: F(2, 15) = 4.7, P = .03, and nonreactivity: F(2, 15) = 3.58, P = .05. Continued practice of skills long term was facilitated by the use of informal practice and perceived improvement in work and personal life.

Conclusion: In sum, MIHP improved subscales of burnout and mindfulness. These findings should be further explored with a larger, controlled study. Interventions should focus on developing mindfulness practice that can be integrated into the work of HCPs.


Abstract:

Background: Mindfulness interventions are increasingly used as a part of integrated treatment in inflammatory bowel disease (IBD) but there are limited data and a lack of consensus regarding effectiveness.

Objectives: We explored the efficacy of mindfulness interventions compared to treatment as usual (TAU), or other psychotherapeutic interventions, in treating physical and psychosocial symptoms associated with IBD.

Methods: We conducted a systematic review and meta-analysis of relevant randomized controlled trials (RCTs). We included a broad range of mindfulness interventions including mindfulness-based interventions and yoga, with no restrictions on date of publication, participants' age, language or publication type. We searched the following electronic databases: MEDLINE, EMBASE, PsycINFO, CINAHL and WHO ICTRP database. We adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines in conducting the review.

Results: We included eight studies in the meta-analysis. Mindfulness interventions showed a statistically significant effect on stress in both the short(SMD = -0.48; 95%CI: -0.97, 0.00; P = .05), and long term(SMD = -0.55; 95%CI: -0.78, -0.32; P < .00001), significant long term effects on depression (SMD = -0.36; 95%CI: -0.66, -0.07; P = .02) and quality of life (SMD = 0.38; 95%CI: 0.08, 0.68; P = .01), and small but not statistically significant
improvements in anxiety (SMD = -0.27; 95%CI: -0.65, 0.11; P = .16). Effects on physical outcomes were equivocal and not statistically significant.

**Conclusions:** Mindfulness interventions are effective in reducing stress and depression and improving quality of life and anxiety, but do not lead to significant improvements in the physical symptoms of IBD. Further research involving IBD-tailored interventions and more rigorously designed trials is warranted.


**Abstract:**

Chronic migraine is a prevalent neurological disorder. Conventional treatment has been providing symptomatic relief by reducing the symptoms of pain and vomiting. In addition, there are side effects associated with these medications. A 53-year-old male presented with chronic migraine with aura. He was treated for acute symptoms for 10 days with the following acupuncture points at the EM 6 (Qiuhou), ST 8 (Touwei), GB-8 (Shuaigu), LI 4 (Hegu), and ST 44 (Neiting). In addition, Vamana Dhauti (VD) (self-induced emesis) was taught once followed by VD practice once a week as part of a long-term follow-up for 10 years. Results suggest that acupuncture is beneficial to reduce the acute symptoms of migraine and the possible frequency of migraine attacks. However, VD has shown to be beneficial in reducing the frequency of migraine attacks over a period of time and eventually led to the complete cessation of migraine attacks. In conclusion, randomized controlled trials are required for testing the efficacy in managing migraine.
attacks over a period of time and eventually led to the complete cessation of migraine attacks. In conclusion, randomized controlled trials are required for testing the efficacy in managing migraine.


Abstract:
Recent literature argues that body image interventions need to become more embodied. This paper evaluates a brief yoga-based body image intervention which incorporates themes specifically tailored to focus on positive body image. Young women (M_{age} = 20.21, SD_{age} = 2.15) were randomly allocated to a four-session yoga intervention (n = 22) or a control condition (n = 22). Compared to controls, participants in the yoga condition reported significant increases in body appreciation, body connectedness, body satisfaction, and positive mood at posttest and at 4-week follow-up. There were no significant changes in negative mood or body surveillance. These findings add to existing evidence that yoga can improve women’s body image and positive mood. In addition, they suggest that a strong thematic focus on positive body image can achieve benefits at relatively low yoga doses. These findings are important as intervention length impacts the potential for dissemination.


Abstract:

Purpose of review: Behavioral intervention describes multiple modalities of treatments which are of increasing interest in epilepsy. This review addresses recent behavioral clinical trials in epilepsy including cognitive behavioral therapy (CBT), mindfulness, progressive muscle relaxation (PMR), and self-management. Results and conclusions from updated Cochrane reviews and the recent International League Against Epilepsy Psychology task force are presented.

Recent findings: Two recent large randomized controlled trials (mindfulness and progressive muscle relaxation) reported improved seizure frequency with behavioral treatments. In both studies, participants in both the active and the attentional control arms showed significant seizure reduction, whereas quality of life and stress reduction were better noted in the active arms. Additional behavioral modalities have reported improved seizure control including yoga, bio/neurofeedback, and music therapy. Significant improvements in multiple quality of life, cognitive domains, and medication adherence have been reported from randomized and open label trials of cognitive behavioral therapy, and self-management programs. Multiple promising self-management programs have been recently reported, often utilizing the power of web-based apps, and digitally delivered group therapy. In 2018, the International League Against
Epilepsy Psychology task force recommended that 'psychological interventions should be incorporated into comprehensive epilepsy care.'

**Summary:** Behavioral treatments are successful and likely underutilized in the treatment of epilepsy. Given the challenge of conducting randomized clinical trials of behavioral therapy, much remains to be studied. However, for motivated and interested patients, appropriately chosen behavioral therapies appear to be important adjuncts to standard therapy. The timing is currently optimal to take best advantage of smartphone apps and web-based delivery systems, both for research and therapeutic purposes.


**Abstract:**

**Purpose:** The aim of the present study was to examine the effects of planned yoga practices on stress levels in infertile women.

**Design and methods:** This randomized controlled study included 128 volunteer women who were registered at a private in vitro fertilization (IVF) clinic and received infertility treatment. The patients in the experimental group took part in the yoga program twice a week for 6 weeks. A personal information form and The Copenhagen Multi-center Psychosocial Infertility (COMPI) Fertility Problem Stress Scale were used to collect data.

**Findings:** The differences between the mean scores of the control and experimental groups on the COMPI Fertility Problem Stress Scale at pre- and posttests were statistically significant ($P < 0.05$).

**Practice Implications:** Because yoga practices may be effective in reducing stress in infertile women, these applications can be performed before treatment. It may reduce patients' stress and increase the success of the treatment. These findings indicate that yoga could reduce stress levels in infertile women.


**Abstract:**

**Aims:** This study aimed to investigate the effects of online Vinyasa Yoga (VY) and Taijifit™ (12 weeks) in informal caregivers ($\geq$18 years of age).

**Methods:** Twenty-nine participants were randomized to two groups: VY ($n = 16, 55.87 \pm 12.31$ years) or Taijifit™ ($n = 13, 55.07 \pm 12.65$ years).

**Main outcome measures:** Prior to and following the study, assessments were made for muscle strength (1-RM leg press, chest press, and handgrip), muscle endurance (leg press and chest press; maximal number of repetitions
performed to fatigue at 80% and 70% baseline 1-RM, respectively), abdominal endurance (maximum number of consecutive curl-ups to fatigue), tasks of functionality (dynamic balance and walking speed), and flexibility (sit and reach).

**Results:** There was a significant increase over time for muscle strength, muscle endurance, tasks of functionality, and flexibility ($P = 0.001$). The VY group experienced a greater improvement in chest press endurance (VY: pre 19.25 ± 5.90, post 28.06 ± 7.60 reps; Taijifit™ pre 15.69 ± 4.49, post 21.07 ± 5.85 reps; $P = 0.019$) and abdominal endurance (VY: pre 37.12 ± 31.26, post 68.43 ± 55.07 reps; Taijifit™ pre 19.23 ± 19.00, post 32.07 ± 20.87 reps; $P = 0.034$) compared to the Taijifit™ group.

**Conclusions:** VY and Taijifit™ are effective for improving muscle strength and endurance, tasks of functionality, and flexibility in informal caregivers. VY led to greater gains in chest press endurance and abdominal curl-ups.


**Abstract:**

**Objective:** Thoracic radiotherapy (TRT) may result in toxicities that are associated with performance declines and poor quality of life (QOL) for patients and their family caregivers. The purpose of this randomized controlled trial was to establish feasibility and preliminary efficacy of a dyadic Yoga (DY) intervention as a supportive care strategy.

**Methods:** Patients with stage I-III non-small cell lung or esophageal cancer undergoing TRT and their caregivers (N=26 dyads) were randomized to a 15-session DY or a waitlist control (WLC) group. Prior to TRT and randomization, both groups completed measures of QOL (SF-36) and depressive symptoms (CES-D). Patients also completed the 6-minute walk test (6MWT). Dyads were reassessed on the last day of TRT and three months later.

**Results:** A priori feasibility criteria were met regarding consent (68%), adherence (80%) and retention (81%) rates. Controlling for relevant covariates, multilevel modeling analyses revealed significant clinical improvements for patients in the DY group compared to the WLC group for the 6MWT (means: DY=473m vs. WLC=397m, $d=1.19$) and SF-36 physical function (means: DY=38.77 vs. WLC=30.88; $d=.66$) and social function (means: DY=45.24 vs. WLC=39.09; $d=.44$) across the follow-up period. Caregivers in the DY group reported marginally clinically significant improvements in SF-36 vitality (means: DY=53.05 vs. WLC=48.84; $d=.39$) and role performance (means: DY=52.78 vs. WLC=48.59; $d=.51$) relative to those in the WLC group.

**Conclusions:** This novel supportive care program appears to be feasible and
beneficial for patients undergoing TRT and their caregivers. A larger efficacy trial with a more stringent control group is warranted.


Abstract:

Background: Duchene muscular dystrophy (DMD) is a progressive muscular disorder. Cardiac disorder is the second-most common cause of death in children with DMD, with 10%-20% of them dying of cardiac failure. Heart rate variability (HRV) is shown to be a predictor of cardio-autonomic function. Physiotherapy (PT) is advised for these children as a regular treatment for maintaining their functional status. The effect of yogic practices on the cardio-autonomic functions has been demonstrated in various neurological conditions and may prove beneficial in DMD.

Materials and Methods: In this study, 124 patients with DMD were randomized to PT alone or PT with yoga intervention. Home-based PT and yoga were advised. Adherence was serially assessed at a follow-up interval of 3 months. Error-free, electrocardiogram was recorded in all patients at rest in the supine position. HRV parameters were computed in time and frequency domains. HRV was recorded at baseline and at an interval of 3 months up to 1 year. Repeated-measures ANOVA was used to analyze longitudinal follow-up and least significant difference for post hoc analysis and P < 0.05 was considered statistically significant.

Results: In our study, with PT protocol, standard deviation of NN, root of square mean of successive NN, total power, low frequency, high-frequency normalized units (HFnu), and sympathovagal balance improved at varying time points and the improvement lasted up for 6-9 months, whereas PT and yoga protocol showed an improvement in HFnu during the last 3 months of the study period and all the other parameters were stable up to 1 year. Thus, it is evident that both the groups improved cardiac functions in DMD. However, no significant difference was noted in the changes observed between the groups.

Conclusion: The intense PT and PT with yoga, particularly home-based program, is indeed beneficial as a therapeutic strategy in DMD children to maintain and/or to sustain HRV in DMD.


Abstract:

Background: Type 2 diabetes mellitus (T2DM) is becoming a leading problem
worldwide. Emerging reports reveal alarming evidence of increasing prevalence of T2DM that has reached pandemic levels. Despite the significant incidence, there are limited reliable data resources and comprehensive systematic review and meta-analysis on the effects of yoga on people who are prediabetic or high risk for developing T2DM.

**Objective:** The objective of this protocol is to conduct a full-scale systematic review and meta-analyses on the effects of yoga on people who are prediabetes or high risk of developing T2DM.

**Methods:** The articles enrolled in the study will be retrieved from the online databases between 2002 and the date the searches are executed. The searches will be repeated just before the final analyses and further relevant studies for inclusion. We will conduct a bibliographic search in databases: Medline/PubMed, Scopus, Cochrane Library, EBSCO, and IndMED using keywords including prediabetes state, high risk for diabetes, metabolic syndrome, and yoga. A defined search strategy will be implemented along with selection criteria to obtain full-text articles of relevant studies. This study protocol was prepared according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis for Protocols 2015 guidelines. There will be no language restrictions.

**Ethics and Dissemination:** The proposed study will be based on published studies and publicly available anonymized data without directly involving human participants and therefore requires neither formal human ethical review nor approval by a human research ethics committee. We published an outline of the protocol in the International Prospective Register of Systematic Reviews (PROSPERO) in 2018. We plan to disseminate the findings of this systematic review and meta-analysis through publication in a peer-reviewed journal and presentation at relevant conference proceedings. In addition, we believe the results of the systematic review will have implications for policy and practice. We will prepare policymaker summary using a validated format, disseminate through social media and email discussion groups.


**Abstract:**

**Background:** Yoga has its origin from the ancient times. It is an integration of mind, body, and soul. Besides, mindfulness emphasizes focused awareness and accepting the internal experiences without being judgemental. These techniques offer a trending new dimension of treatment in various psychiatric disorders.

**Aims:** We aimed to review the studies on the efficacy of yoga and mindfulness as a treatment modality in severe mental illnesses (SMIs). SMI includes
Methods: We conducted a literature search using PubMed, Google Scholar, and Cochrane Library with the search terms "yoga," "meditation," "breathing exercises," "mindfulness," "schizophrenia spectrum and other psychotic disorders," "depressive disorder," and "bipolar disorder" for the last 10-year period. We also included relevant articles from the cross-references.

Results: We found that asanas and pranayama are the most commonly studied forms of yoga for schizophrenia. These studies found a reduction in general psychopathology ratings and an improvement in cognition and functioning. Some studies also found modest benefits in negative and positive symptoms. Mindfulness has not been extensively tried, but the available evidence has shown benefits in improving psychotic symptoms, improving level of functioning, and affect regulation. In MDD, both yoga and mindfulness have demonstrated significant benefit in reducing the severity of depressive symptoms. There is very sparse data with respect to BD.

Conclusion: Both yoga and mindfulness interventions appear to be useful as an adjunct in the treatment of SMI. Studies have shown improvement in the psychopathology, anxiety, cognition, and functioning of patients with schizophrenia. Similarly, both the techniques have been established as an effective adjuvant in MDD. However, more rigorously designed and larger trials may be necessary, specifically for BD.

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**Abstract:**

**Background:** Important stages of creativity include preparation, incubation, illumination, and verification. Earlier studies have reported that some techniques of meditation promote creativity but have not specified which stage is enhanced. Here, we report the influence of cyclic meditation (CM) on creative cognition measured by a divergent thinking task. Our aim was to determine the degree of association between the two.

**Methods:** Twenty-four university students were randomly assigned to an experimental group (CM) and controls (Supine Rest), 35 min/day for 7 days. Creativity performance was assessed pre and post using Abbreviated Torrance Test for Adults (ATTA), while 64-channel electroencephalography (EEG) was used to measure brain activity during both CM/SH and the creativity test.

**Results:** Results indicated that CM training improved creativity performance, producing a shift to predominant gamma activity during creativity compared controls who showed delta activity. Furthermore, the experimental group showed more activation of frontal and parietal regions (EEG leads F3, F4 and P3, P4) than controls, i.e., the regions of the executive network responsible for creative cognition, our particular regions of interest where specialized knowledge is being stored.

**Conclusion:** Improvement on creativity test performance indicates that CM increases association and strengthens the connectivity between frontal and parietal lobes, the major nodes of default mode network and executive attention network, enhancing the important stages of creativity such as preparation, incubation, and illumination.

**Shi WY, Lin ZH, Luo R et al.** *Clinical observation of warm acupuncture*
Abstract:

Objective: To observe the clinical efficacy of warm acupuncture combined with yoga posture method in the treatment of periarthritis with frozen period.

Methods: Ninety patients with periarthritis who met the inclusion criteria were randomly divided into a control group 1, a control group 2 and an observation group, 30 cases in each group. Warm acupuncture was applied in the control group 1 (Jianzhen (SI 9), Jianyu (LI 15), Jianliao (TE 14), etc were selected), yoga posture method was applied in the control group 2, warm acupuncture combined with yoga posture method were given in the observation group, the treatment was given once a day, 10 times as a course with 2 days between courses and continuous for 2 courses. After 2 courses of treatment, the shoulder joint pain score and shoulder function grading were used to evaluate the clinical efficacy, and the clinical efficacy was observed.

Results: ① The pain scores of the three groups were significantly lower after treatment (all P<0.01), and scores in the observation group was better than that in the control group 1 and the control group 2 (P<0.05, P<0.01). There was no significant difference between the control group 1 and the control group 2 (P>0.05). ② After treatment, the functional classification of shoulder joints were significantly improved in the three groups (all P<0.01), and the functional classification of shoulder joint in the observation group and the control group 2 were better than that in the control group 1 (P<0.01, P<0.05). There was no significant difference between the observation group and the control group 2 (P>0.05). ③ After 2 courses of treatment, the effective rate of the observation group was 86.7% (26/30), which was better than 70.0% (21/30) in the control group 1 and 76.7% (23/30) in the control group 2 (both P<0.05).

Conclusion: Warm acupuncture combined with yoga posture method can effectively relieve shoulder pain and improve dysfunction. The clinical comprehensive effect is better than simple acupuncture and yoga posture method.


Abstract:

Context: Reliable quantitative measure of meditation is still elusive. Although electroencephalogram (EEG) and heart rate variability (HRV) are known as quantitative measures of meditation, effects of meditation on EEG and HRV may well take long time as these measures are involuntarily controlled. Effect of mediation on respiration is well known; however, quantitative measures of
respiration during meditation have not been studied.

**Aims:** Breath rate variability (BRV) as an alternate measure of meditation even over a short duration is proposed. The main objective of this study is to test the hypothesis that BRV is a simple measure that differentiates between meditators and nonmeditators.

**Settings and Design:** This was a nonrandomized, controlled trial. Volunteers meditate in their natural habitat during signal acquisition.

**Subjects and methods:** We used Photo-Plythysmo-Gram (PPG) signal acquisition system from BIO-PAC and recorded video of chest and abdomen movement due to respiration during a short meditation (15 min) session for 12 individuals (all males) meditating in a relaxed sitting posture. Seven of the 12 individuals had substantial experience in meditation, while others are controls without any experience in meditation. Respiratory signal from PPG signal was derived and matched with that of the video respiratory signal. This derived respiratory signal is used for calculating BRV parameters in time, frequency, nonlinear, and time-frequency domain.

**Statistical analysis used:** First, breath-to-breath interval (BBI) was calculated from the respiration signal, then time domain parameters such as standard deviation of BBI (SDBB), root mean square value of SDBB (RMSSD), and standard deviation of SDBB (SDSD) were calculated. We performed spectral analysis to calculate frequency domain parameters (power spectral density [PSD], power of each band, peak frequency of each band, and normalized frequency) using Burg, Welch, and Lomb-Scargle (LS) method. We calculated nonlinear parameters (sample entropy, approximate entropy, Poincare plot, and Renyi entropy). We calculated time frequency parameters (global PSD, low frequency-high frequency [LF-HF] ratio, and LF-HF power) by Burg LS and wavelet method.

**Results:** The results show that the mediated individuals have high value of SDSD (+24%), SDBB (+29%), and RMSSD (+26%). Frequency domain analysis shows substantial increment in LFHF power (+73%) and LFHF ratio (+33%). Nonlinear parameters such as SD1 and SD2 were also more (>20%) for meditated persons.

**Conclusions:** As compared to HRV, BRV can provide short-term effect on anatomic nervous system meditation, while HRV shows long-term effects. Improved autonomic function is one of the long-term effects of meditation in which an increase in parasympathetic activity and decrease in sympathetic dominance are observed. In future works, BRV could also be used for measuring stress.

**Abstract:**

Yoga is increasingly being recommended as a health self-management strategy for people with a range of disabilities. Mainstream yoga media have been criticized for limited representation of racial/ethnic, gender, age, and body size diversity within their publications; however, it is not known how these media outlets include visual representations of or textual information relevant for people with disabilities (PWDs). The purpose of this research was to understand if and how mainstream yoga media visually represent and include information for PWDs. We conducted a content analysis of the "Yogapedia" section of each *Yoga Journal* magazine published in 2015 and 2016 (n = 17). Two independent coders rated all of the images and text in these sections. Data were analyzed using a thematic approach informed by a prominent theoretical model of disablement. Results suggest that images contained no representation of disability. In contrast, magazine text included an abundance of references to disability; however, these mentions predominately aligned with constructs found early in the disablement process and strongly focused on physical and mobility limitations. These findings expand upon previous research examining the underrepresentation of marginalized groups within yoga media and illuminate a paucity of relevant information for individuals with disabilities who are interested in and may benefit from yoga practice.


**Abstract:**

**Aim:** This study aims to evaluate the feasibility and effects of instruction in yogic breathing techniques (Pranayama) in patients with treatment-resistant generalized anxiety disorder (GAD) in UK secondary mental health services settings.

**Materials and Methods:** Participants were adult primary or secondary care patients with a primary diagnosis of GAD (with or without comorbidity) and persistent anxiety symptoms of at least moderate intensity, despite prior treatment with two or more medications of proven efficacy. Patients participated in group-delivered yogic breathing training and practice for 12 weeks. Structured assessments were performed at baseline, after 1, 2, and 6 weeks of instruction, and at end-point. Participants also completed the antisaccade (emotional variant) task and startle response task at baseline and end-point.

**Results:** At baseline, participating patients (n = 9) had moderate-to-severe anxiety symptoms and mild-to-moderate depressive symptoms, they attended 84% of offered sessions and provided positive feedback on the content and delivery of treatment. Symptom severity reduced significantly from baseline to
end-point. There were greater errors on negative trials compared to neutral trials in the antisaccade task at baseline, and a significant reduction in antisaccade errors for negative stimuli as compared to neutral stimuli between baseline and end-point: but there were no significant differences in either mean heart rate or startle response between baseline and end-point.

**Limitations:** The absence of a control group and small sample size.

**Conclusion:** Yogic breathing techniques proved simple to learn and may be beneficial in reducing anxiety and depressive symptoms in patients with treatment-resistant GAD. Yogic breathing had no effect on autonomic arousal, but the reduction in errors to negative stimuli in the antisaccade task suggests an improvement in attention control during the intervention accompanying the reduction in symptoms.


**Abstract:**

**Background:** Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impairment in social interactions, communication, restricted, and repetitive behaviors. Evidence-based treatment options for ASD are limited. Yoga is practiced by over 20 million people worldwide, and multiple studies have investigated yoga as a possible effective intervention for children with ASD.

**Aim:** The aim of this study is to investigate the effect of yoga intervention on short-term heart rate variability (HRV) in children with ASD.

**Methodology:** In this study, 50 children (38 boys and 12 girls) with ASD were recruited from Swabhimaan Trust, Palavakkam, Chennai. They were randomly grouped into ASD with yoga intervention group (n = 25) and ASD without yoga intervention group (n = 25) by simple lottery method. Yoga group children underwent yoga training for 3 months, and the control group did not receive any such training. For short-term HRV, 15 min electrocardiogram recording in sitting posture was recorded in lead II using a simple analog amplifier.

**Results:** In HRV, time domain parameters such as mean RR interval (0.72 [0.74] to 0.94 [0.92]), standard deviation of the NN intervals (52.04 [54.23] to 74.48 [72.80]), and root of the mean squared differences of successive NN interval (32.60 [34.40] to 40.83 [42.90]) significantly increased in ASD children after yoga intervention. In frequency-domain parameters, high frequency (HF) in n. u (48.08 [47.24] to 58.37 [59.22]) shows a significant increase and low frequency (LF) in n. u (52.4 [51.82] to 40.51 [40.12]), and LF/HF ratio (1.29 [1.31] to 0.78 [0.79]) shows a significant decrease in ASD with yoga intervention group children after 3 months of yoga training.
**Conclusion:** Yoga interventions have been successful in bringing parasympathetic dominance in ASD children, and the greater advantage is being a noninvasive way of intervention to support children with ASD and help them to achieve physiological as well as psychological balance.


**Abstract:**

Preliminary positive evidence supports the use of iRest (Integrative Restoration) in older adults with depression symptoms. No long-term follow-up measures have been reported on whether the preliminary effects continue beyond initial iRest trainings. The growing population of older adults with depression symptoms is a serious public health issue, and effective interventions to support this vulnerable population are warranted. The objectives of this study were to evaluate the depression and depression-related symptoms 6 and 12 months after an iRest intervention. All study measures were collected online. Twenty-five of the original participants completed the 6- and 12-month surveys. Of those, nine stated that they still practiced the guided meditations at the time of the 12-month follow-up (five iRest and four vacation participants). Both groups had improvements in depression scores from baseline (week 0) to the 12-month follow-up. There were no differences between groups on depression symptoms or other measures except for negative mood and perceived stress, which were improved in the vacation group compared to the iRest group. Meditation practice was not a significant predictor of depression score improvement.


**Abstract:**

**Context:** Yoga improves physical and respiratory functions in healthy inactive middle-aged people.

**Aim:** This study aimed to assess the effects of 8 weeks of asana and asana with pranayama lessons in order to clarify the influence of two different combinations of yoga practice on physical and respiratory functions in healthy inactive middle-aged people.

**Subjects and methods:** A total of 28 participants (mean age: 52.7 years) were divided into a yoga asana (YA) group and YA with pranayama (YAP) group. Participants attended a 70-min session once a week for 8 weeks. The YA group practiced basic asana without specific breathing instructions, while the YAP group practiced basic asana with specific breathing instructions (pranayama).
Respiratory function was measured with an autospirometer. Physical function assessments included the 30-s chair stand test and upper and lower extremity flexibility. All tests were assessed at baseline and after 8 weeks of intervention.

**Statistical Analysis:** Changes in scores were analyzed with the paired t-test for each group. Pre-post results were compared for all the measured values. P < 0.05 was considered statistically significant.

**Results:** Both groups showed significant improvements in physical and overall respiratory functions after the 8-week yoga intervention. However, the maximal inspiratory pressure and lower extremity flexibility improved only in the YAP group.

**Conclusions:** The 8-week yoga intervention for healthy inactive middle-aged people improved the overall respiratory and physical functions, and the inclusion of pranayama had the added benefit of improving inspiratory muscle strength and global body flexibility.