

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. Subhash Kaushik, Director General, CCRH for his encouragement and valuable suggestions from time to time. We sincerely acknowledge the cooperation of Mrs. Nisha Adhikari, Office Assistant in compiling this bulletin.

(Dr. O.P. Verma)
Librarian

HOMOEOPATHY

Adler UC, Adler MS, Padula AEM, Hotta LM, de Toledo Cesar A, Diniz JNM et al. Homeopathy for COVID-19 in primary care: A randomized, double-blind, placebo-controlled trial (COVID-Simile study). J Integr Med. 2022 May;20(3):221-229. doi: 10.1016/j.joim.2022.03.003. Epub 2022 Mar 12. PMID: 35339397

Abstract:

Background: Different homeopathic approaches have been used as supportive care for coronavirus disease 2019 (COVID-19) cases, but none has been tested in a clinical trial.

Objectives: To investigate the effectiveness and safety of the homeopathic medicine, Natrum muriaticum LM2, for mild cases of COVID-19.

Design, setting, participants, and interventions: A randomized, double-blind, two-armed, parallel, single-center, placebo-controlled clinical trial was conducted from June 2020 to April 2021 in São-Carlos, Brazil. Participants aged > 18 years, with influenza-like symptoms and positive result from a real-time polymerase chain reaction test for severe acute respiratory syndrome coronavirus 2 were recruited and randomized (1:1) into two groups that received different treatments during a period of at-home-isolation. One group received the homeopathic medicine Natrum muriaticum, prepared with the second degree of the fifty-millesimal dynamization (LM2; Natrum muriaticum LM2), while the other group received a placebo.

Outcome measures: The primary endpoint was time until recovery from COVID-19 influenza-like symptoms. Secondary measures included a survival analysis of the number and severity of COVID-19 symptoms (influenza-like symptoms plus anosmia and ageusia) from a symptom grading scale that was informed by the participant, hospital admissions, and adverse events. Kaplan-Meier curves were used to estimate time-to-event (survival) measures.

Results: Data from 86 participants were analyzed (homeopathy, n = 42; placebo, n = 44). There was no difference in time to recovery between two groups among participants who were reporting influenza-like symptoms at the beginning of monitoring (homeopathy, n = 41; placebo, n = 41; P = 0.56), nor in a sub-group that had at least 5 moderate to severe influenza-like symptoms at the beginning of monitoring (homeopathy, n = 15; placebo, n = 17; P = 0.06). Secondary outcomes indicated that a 50% reduction in symptom score was achieved significantly earlier in the homeopathy group (homeopathy, n = 24; placebo, n = 25; P = 0.04), among the participants with a basal symptom score ≥ 5 . Moreover, values of restricted mean survival time indicated that patients receiving homeopathy might have improved 0.9 days faster during the first five days of follow-up (P = 0.022). Hospitalization rates were 2.4% in the

homeopathy group and 6.8% in the placebo group ($P = 0.62$). Participants reported 3 adverse events in the homeopathy group and 6 in the placebo group.

Conclusion: Results showed that Natrum muriaticum LM2 was safe to use for COVID-19, but there was no statistically significant difference in the primary endpoints of Natrum muriaticum LM2 and placebo for mild COVID-19 cases. Although some secondary measures do not support the null hypothesis, the wide confidence intervals suggest that further studies with larger sample sizes and more symptomatic participants are needed to test the effectiveness of homeopathic Natrum muriaticum LM2 for COVID-19.

Trial registration: UMIN Clinical Trials Registry ID: JPRN-UMIN000040602.

Dutta S, Ganguly S, Mukherjee SK, Ghosh P, Hazra P, Roy AS et al. Efficacy of individualized homeopathic medicines in intervening with the progression of pre-hypertension to hypertension: A double-blind, randomized, placebo-controlled trial. Explore (NY). 2022 May-Jun;18(3):279-286. doi: 10.1016/j.explore.2021.05.007. Epub 2021 Jun 5. PMID: 34147344

Abstract:

Context: Pre-hypertension remains a significant public health challenge and appropriate intervention is required to stop its progression to hypertension and/or cardiovascular diseases.

Objective: To study the effects of individualized homeopathic medicines (IH) against placebo in intervening with the progression of pre-hypertension to hypertension.

Design: Double-blind, randomized, two parallel arms, placebo-controlled trial.

Setting: Outpatient departments of D. N. De Homoeopathic Medical College and Hospital, Kolkata, West Bengal, India.

Patients: Ninety-two patients suffering from pre-hypertension; randomized to receive either IH ($n = 46$) or identical-looking placebo ($n = 46$).

Interventions: IH or placebo in the mutual context of lifestyle modification (LSM) advices including dietary approaches to stop hypertension (DASH) and brisk exercises.

Main outcome measures: Primary - systolic and diastolic blood pressure (SBP and DBP); secondary - Measure Yourself Medical Outcome Profile version 2.0 (MYMOP-2) scores; all measured at baseline, and every month, up to 3 months.

Results: After 3 months of intervention, the number of patients having progression from pre-hypertension to hypertension between groups were similar without any significant differences in between (all $P > 0.05$). Reduction

in BP and MYMOP-2 scores were non-significantly higher (all $P > 0.05$) in the IH group than placebo with small effect sizes. *Lycopodium clavatum*, *Thuja occidentalis* and *Natrum muriaticum* were the most frequently prescribed medicines. No harms or serious adverse events were reported from either group. Thus, there was a small, but non-significant direction of effect favoring homeopathy, which ultimately rendered the trial as inconclusive. [Trial registration: CTRI/2018/10/016,026; UTM: U1111-1221-8251].

Nayak D, Gupta J, Chaudhary A, Singh KG, Deshmukh A, Das D et al. Efficacy of individualized homeopathy as an adjunct to standard of care of COVID-19: A randomized, single-blind, placebo-controlled study. Complement Ther Clin Pract. 2022 May 8;48:101602. doi: 10.1016/j.ctcp.2022.101602. Online ahead of print. PMID: 35569230

AYURVEDA

Anupama KP, Shilpa O, Antony A, Raghu SV, Gurushankara HP. Jatamansinol from *Nardostachys jatamansi* (D.Don) DC. Protects A β ₄₂-Induced Neurotoxicity in Alzheimer's Disease *Drosophila* Model. *Neurotoxicology*. 2022 May;90:62-78. doi: 10.1016/j.neuro.2022.02.011. Epub 2022 Mar 2. PMID: 35247505

Abstract:

Nardostachys jatamansi (D. Don) DC. is an essential plant used in Indian Ayurveda to treat neurological disorders, and it enhances memory. Its active phytochemical(s) responsible for neuroprotection is not yet studied. One of the neurological disorders, namely Alzheimer's disease (AD) causes dementia, is not having pharmacological strategies to effectively prevent the onset of AD, cure or reverse AD progression, and treat cognitive symptoms. Here is an attempt to analyze the neuroprotective effect of jatamansinol isolated from *N. jatamansi* against A β ₄₂ protein-induced neurotoxicity using the A β ₄₂ protein expressed *Drosophila* Alzheimer's disease (AD) model. Oregon-K (OK) and AD flies were reared on regular or jatamansinol supplemented food and analyzed for their lifespan, locomotor activity, learning and memory, eye degeneration, oxidative stress levels, antioxidant activities, cholinesterase activities, A β ₄₂ protein, and A β ₄₂ gene expression. Jatamansinol extends the lifespan, improves locomotor activity, enhances learning and memory, and reduces A β ₄₂ protein levels in AD flies. Jatamansinol boosts the antioxidant enzyme activities, prevents A β ₄₂ protein-induced oxidative stress, ameliorates eye degeneration, and inhibits cholinesterase activities in the AD model. This study evidences the protective effect of jatamansinol against the A β ₄₂ protein-induced neurotoxicity in the AD *Drosophila* model, suggesting its possible therapeutic potential against AD.

Ashokkumar K, Simal-Gandara J, Murugan M, Dhanya MK, Pandian A. Nutmeg (*Myristica fragrans* Houtt.) essential oil: A review on its composition, biological, and pharmacological activities. *Phytother Res*. 2022 May 13. doi: 10.1002/ptr.7491. Online ahead of print. PMID: 35567294

Abstract:

Myristica fragrans (Houtt.) is an evergreen tree native to the Maluku Islands, Indonesia. *M. fragrans* kernel is extensively used in Indian traditional medicines to treat various diseases. Several studies attempt to compile and interpret the pharmacological potential of *Myristica fragrans* (Houtt.) aqueous and various chemical extracts. Thus, the pharmacological potential of nutmeg essential oil has not been reviewed phytochemically and pharmacologically. Therefore, the present study aimed to share appropriate literature evidence

regarding the plant essential oil chemical composition and therapeutic potential of *Myristica fragrans* essential oil (MFEO). MFEO of leaf, mace, kernel, and seed were used worldwide as potential Ayurvedic medicine and fragrance. MFEO extracted by various methods and oil yield was 0.7-3.2, 8.1-10.3, 0.3-12.5, and 6.2-7.6% in leaf, mace, seed, and kernel. The primary chemical constituents of MFEO were sabinene, eugenol, myristicin, caryophyllene, β -myrcene, and α -pinene. Clinical and experimental investigations have confirmed the antioxidant, antimicrobial, antiinflammatory, anticancer, antimalarial, anticonvulsant, hepatoprotective, antiparasitic, insecticidal, and nematocidal activities of MFEO. It is the first attempt to compile oil yield, composition, and the biological activities of MFEO. In future, several scientific investigations are required to understand the mechanism of action of MFEO and their bioactive constituents.

Balkrishna A, Tomer M, Joshi M, Gujral S, Kumar Mishra R, Srivastava J et al. Standardization and validation of phytometabolites by UHPLC and high-performance thin layer chromatography for rapid quality assessment of ancient ayurvedic medicine, Mahayograj Guggul. J Sep Sci. 2022 May;45(10):1616-1635. doi: 10.1002/jssc.202100935. Epub 2022 Feb 25. PMID: 35152549

Abstract:

Mahayograj Guggul is an ancient ayurvedic medicine, prescribed for various joint disorders like arthritis, gout, and rheumatism. The present research was envisaged to develop a simple, sensitive, and comprehensive analytical method for standardization of Mahayograj Guggul. The analysis was conducted for gallic acid, protocatechuic acid, vanillic acid, cinnamic acid, piperine, guggulsterone-E, and guggulsterone-Z by high-performance thin-layer chromatography, and additionally ferulic acid, ellagic acid, and picroside I by ultra high-performance liquid chromatography. These developed methods were validated as per international guidelines, and were found linear ($r^2 > 0.99$), sensitive, precise (relative standard deviation $< 5\%$), and accurate with recovery values (85-105%). The limit of detection and quantification were in the range of 0.11-23.6 and 0.33-71.51 $\mu\text{g/g}$. Gas chromatography tandem mass spectrometry was used to develop Mahayograj Guggul fingerprinting profile and to identify mid-polar or nonpolar compounds. Proximate analysis was used to ascertain the functional groups present in Mahayograj Guggul. Ultra high-performance liquid chromatography and gas chromatography tandem mass spectrometry were further employed to authenticate quality reproducibility in the active ingredients of Mahayograj Guggul in six commercial batches. Taken together, these analytical methods provide a scientific basis and reference for quality control evaluation of Mahayograj Guggul and similar traditional broad-spectrum formulations.

Daniel John M, Taylor EJ. Beyond Turmeric and Yoga: Advance Care Planning and End-of-Life Considerations Among Asian Indian American Hindus. J Hosp Palliat Nurs. 2022 May 13. doi:

10.1097/NJH.0000000000000880. Online ahead of print. PMID: 35560304

Abstract:

Hinduism is the fourth largest religion in the United States; an understanding of Hindu beliefs and practices will help health care providers deliver culturally sensitive care while discussing advance care planning and end-of-life care for adult patients. For many Westerners, the practice of yoga, Ayurveda, and vegetarianism is used by people striving to live healthfully. However, what might be unfamiliar to Westerners is how for Hindus, these practices reflect their millennia-old spirituality and religiosity. Knowing the Hindu beliefs of atman, Brahman, karma, and moksha will help nurses connect to Hindus' various end-of-life wishes. In addition, getting familiar with interrelating factors such as lack of knowledge on palliative care and advance care planning, family dynamics, acculturation, and personal preferences will allow nurses to provide culturally competent care. By facilitating end-of-life conversations at an early stage, nurses can promote confidence and self-efficacy for patients who may fear that their religiosity and personal priorities are trivialized by acculturated family members or disregarded by their adopted homeland. This clinical article provides nurses with information about Asian Indian American Hindus' beliefs and practices, clinical implications for assessment, and suggestions to support patients' and families' end-of-life wishes.

Gandhi Y, Mishra SK, Rawat H, Grewal J, Kumar R, Shakya SK et al. Phytomedicines explored under in vitro and in silico studies against coronavirus: An opportunity to develop traditional medicines. S Afr J Bot. 2022 May 2. doi: 10.1016/j.sajb.2022.04.053. Online ahead of print. PMID: 35530267

Abstract:

The widespread COVID-19 pandemic, caused by novel coronavirus SARS-CoV-2, has emanated as one of the most life-threatening transmissible diseases. Currently, the repurposed drugs such as remdesivir, azithromycine, chloroquine, and hydroxychloroquine are being employed in the management of COVID-19 but their adverse effects are a matter of concern. In this regard, alternative treatment options *i.e.*, traditional medicine, medicinal plants, and their phytochemicals, which exhibit significant therapeutic efficacy and show a low toxicity profile, are being explored. The current review aims at unraveling the promising medicinal plants, phytochemicals, and traditional medicines against SARS-CoV-2 to discover phytomedicines for the management of COVID-19 on the basis of their potent antiviral activities against coronaviruses, as demonstrated in various biochemical and computational chemical biology studies. The review consists of integrative and updated information on the potential traditional medicines against COVID-19 and will facilitate researchers to develop traditional medicines for the management of COVID-19.

Khatoon S, Kalam N, Balasubramaniam VR, Shaikh MF, Ansari MT. Chemotherapeutic Role of Polyphenols Present in Ocimum Sanctum. Anticancer Agents Med Chem. 2022 May 16. doi: 10.2174/1871520622666220516142839. Online ahead of print. PMID: 35578854

Abstract:

Ocimum sanctum is a sacred herb of India and is commonly known as 'Tulsi' or 'Holy Basil' in regional languages of the country. Various parts of O. sanctum are recognised to have remarkable therapeutic efficacy, and are therefore used in Indian traditional medicine system, Ayurveda. Scientific studies have shown that O. sanctum has a range of pharmacological activities. The presence of a substantial amount of polyphenols in O. sanctum could be the reason for its excellent bioactivity. Polyphenols are used to prevent or treat oncologic diseases due to their anti-cancer effects, which are related to activation of apoptotic signaling, cell cycle arrest, binding ability with membrane receptors, and potential effects on immunomodulation and epigenetic mechanisms. The poor bioavailability of polyphenols restricts their clinical use. The application of nanonization has been implemented to improve their bioavailability, penetrability, and prolong their anticancer action. The present review analyses the recent preclinical studies related to the chemopreventive and therapeutic potential of polyphenols present in O. sanctum. Moreover, the current article also examines in-depth the biochemical and molecular mechanisms involved in the antineoplastic actions of the considered polyphenols.

Koundal S, Gandhi S, Khushu S. Studies on metabolic alterations due to hypobaric hypoxia in serum using NMR spectroscopy. Biomarkers. 2022 May 15:1-6. doi: 10.1080/1354750X.2022.2076152. Online ahead of print. PMID: 35532034

Abstract:

Introduction: The main physiological challenge in high altitude environment is hypoxia which affects the aerobic metabolism reducing the energy supply. These changes may further progress towards extreme environment related diseases. Rarely has the high-altitude biology been studied using system sciences and omics high-throughput technologies.

Objective: In the present study, ¹H-NMR-based metabolomics, along with multivariate analysis, were employed in a preclinical rat model to characterise the serum metabolic changes under chronic hypobaric hypoxia (HH) stress.

Material and methods: Rats were exposed to simulated hypobaric hypoxia equivalent of 6700 m above the sea level. The serum samples were collected from control and HH-exposure (7, 14, and 21 days) of hypobaric hypoxia.

Results and discussion: The ¹H-NMR metabolomics of the serum showed alterations in the metabolism of membranes, amino-acids altered cellular bioenergetics and osmoregulation. Multivariate statistical analysis revealed alterations in acetoacetate, choline, glutamine, acetate, betaine, ketone bodies and branched amino acid metabolites.

Conclusion: Present findings establishes the fingerprint biomarkers for chronic environmental hypoxia which will help in understanding extreme environment related health problems, early detection and developing strategies to clinically address high altitude hypoxia.

Kumar P, Sharma R, Garg N. Withania somnifera: A magic plant targeting multiple pathways in cancer related inflammation. Phytomedicine. 2022 Jul;101:154137. doi: 10.1016/j.phymed.2022.154137. Epub 2022 May 2. PMID: 35533610

Abstract:

Background: Deregulated inflammatory responses are known to play a pivotal role in cancer initiation and progression. Tumor microenvironment is associated with the presence of a diverse array of inflammatory reactions, which further help tumor growth, metastasis and drug resistance. *Withania somnifera* is known to curb proliferation of cancer cells and lower inflammatory responses.

Purpose: In order to minimize the inflammation, cancer treatments often include immunomodulatory drugs. However, given the side effects of both of the cytotoxic cancer drugs and synthetic immunomodulatory agents, there is a need to develop novel anti-inflammatory agents for improved cancer therapy. A number of reports indicate that bioactive phytochemicals derived from *W. somnifera* exhibit anti-inflammatory capabilities in cancer. A deeper look into the underlying molecular mechanisms implicated in *W. somnifera* mediated anti inflammation is lacking, which is essential to fully understand the potential of this magical plant in cancer. Therefore, in the present review we are summarizing various reports, which describe mechanistic understanding of *W. somnifera* in cancer related inflammation.

Study design and methodology: In order to gather information on the molecular pathways affected by *W. somnifera* in cancer related inflammation, 'PubMed' and 'Science Direct' databases were searched using keywords *Withania*, cancer inflammation, and Withaferin A. Selected literature was analyzed to cover the role of inflammation in cancer, usage and side effects of anti-inflammatory drugs, *W. somnifera* as an immunomodulatory agent in cancer, molecular pathways modulated by *W. somnifera* in various preclinical models, and clinical trials using *W. somnifera* as an anti-inflammatory agent.

Results: Upon literature survey we found that both *W. somnifera* extracts and Withaferin-A, exhibit anti inflammatory activities in various preclinical cancer models. *W. somnifera* modulates a number of signaling pathways such as NF-

kB, JAK-STAT and AP1 to reduce cancer related inflammation. Anti inflammatory properties of *W. somnifera* might be effective in the treatment of drug resistance in cancers. Based on its promising effects against cancer associated inflammation in preclinical studies, *W. somnifera* derived products are being tested in clinical trials.

Conclusion: Several preclinical studies demonstrated anti-inflammatory potential of *W. somnifera* in a variety of cancers. While a few clinical trials are investigating the role of *W. somnifera* in various diseases, focused studies on its role in cancer related inflammation are lacking. Additionally, its anti-inflammatory effects offer targeting of senescence associated secretory phenotype (SASP), which is speculated to play a critical role in chemoresistance. Apart from targeting cancer cell proliferation, anti-inflammatory effects of *Withania* provide double advantage in cancer management. Therefore, clinical trials to target cancer related inflammation using *W. somnifera* as a drug, should be performed to validate its advantages in cancer therapy.

Londhe D, Chinchalkar S, Chiluveri AC, Kumar S, Chiluveri SK. Noxious Alterations in Human Milk: An Ayurveda Perspective. J Hum Lact. 2022 May;38(2):332-338. doi: 10.1177/08903344211032130. Epub 2021 Jul 26. PMID: 34311623

Manikandan R, Balasubramanian B, Punniyakotti P, Vijaya Anand A, Meyyazhagan A, Velayuthaprabhu S et al. Cardio-protective effects of terminalia catappa leaves and terminalia chebula fruit extract in doxorubicin-induced cardiomyopathy in rats. Biomarkers. 2022 May 2:1-8. doi: 10.1080/1354750X.2022.2064550. Online ahead of print. PMID: 35400254

Abstract:

Background: The cardio-protective effects of *Terminalia catappa* and *Terminalia chebula* are well-recognized in Ayurveda for its antimicrobial, antidiabetic and antioxidant potentials. The present study evaluates the effects of *T. catappa* leaves (Tct.LE) and *T. chebula* fruits (Tce.FE) against doxorubicin (DOX)-induced rats through analysis of the cardiac biomarkers, tricarboxylic acid (TCA) cycle enzymes and respiratory chain enzymes for their cardio-protective properties.

Materials and methods: This study includes 42 adult male Albino Wistar rats randomized into seven groups for 21-days. Groups were categorized as control; DOX (1.5 mg/kg) induced negative control; basal diet with 300 mg/kg of Tct.LE, with 300 mg/kg Tce.FE; DOX with 300 mg/kg of Tct.LE, Tce.FE, and propranolol (25 mg/kg).

Results and discussion: The doses of 300 mg/kg of both plants have a significant effect on the TCA cycle, respiratory and lysosomal enzymes activity. The troponin levels are significantly reduced in plant treated group than the

DOX-treated rats when compared with the control and propranolol treated group. Likewise, the increased level of creatine kinase-muscle/MB, creatine kinase and lipid profile in the DOX-treated animals were significantly reduced upon being treated with extracts.

Conclusion: The cardio-protective activity of Tct.LE leaves and Tce.FE indicate its potential use in the management of cardiovascular diseases.

Mitra S, Islam F, Das R, Urmee H, Akter A, Idris AM et al. Pharmacological Potential of Avicennia alba Leaf Extract: An Experimental Analysis Focusing on Antidiabetic, Anti-inflammatory, Analgesic, and Antidiarrheal Activity. Biomed Res Int. 2022 May 6;2022:7624189. doi: 10.1155/2022/7624189. eCollection 2022. PMID: 35572728

Abstract:

Avicennia alba is a mangrove plant that is extensively used to treat severe health issues. This focus of this study was to investigate the antidiabetic, anti-inflammatory, analgesic, and antidiarrheal activities of methanolic extract of A. alba leaves in Swiss albino mouse model. The antidiabetic, anti-inflammatory, analgesic, and antidiarrheal activities of the leaf extract were performed using alloxan-monohydrate, carrageenan-induced paw edema, acetic acid-induced writhing test and the hot plate method, and castor oil-induced method, respectively. The extract was used at doses ranging from 200 to 500 mg/kg to conduct the investigation. Leaf extract at 400 and 500 mg/kg showed potent antidiabetic activity in alloxan-induced diabetic mice. Advanced research is needed to control blood glucose levels and carrageenan paw edema-based anti-inflammatory effects. Both tests showed statistically significant result in a dose-dependent manner. The maximum dose (500 mg/kg) demonstrated potent analgesic activity in both writhing test and hot plate method. The plant extract also showed significant antidiarrheal activity at 400 and 500 mg/kg in experimental mice. However, more research is needed to explore the possible mechanisms and isolate the compounds associated with these bioactivities from the leaf extract of A. alba.

Ninave PB, Patil SD. Pharmacological screening of Acalypha indica L.: Possible role in the treatment of asthma. J Ethnopharmacol. 2022 May 23;290:115093. doi: 10.1016/j.jep.2022.115093. Epub 2022 Feb 8. PMID: 35149129

Abstract:

Ethnopharmacological relevance: Acalypha indica Linn (Euphorbiaceae), a popular traditional medicine, is an erect herb found throughout various parts of India. In Ayurveda, Acalypha indica was commonly used in asthma and allergy. However, no attempts were made in past to validate the antiasthmatic potential of Acalypha indica.

Aim of the study: The present study was aimed to assess the anti-asthmatic potential of ethanolic extracts of *Acalypha indica* leaves (EAIL) using various experimental animal models.

Materials and methods: EAIL was analyzed using different screening methods such as acetylcholine and histamine-induced contraction of goat tracheal chain, clonidine-induced catalepsy in mice, milk-induced leucocytosis and eosinophilia in mice, clonidine-induced mast cell degranulation in rats, passive paw anaphylaxis in rats, histamine-induced bronchoconstriction in guinea pigs, and ovalbumin (OVA)-induced histopathological alterations in mice.

Results: Data received in the present study showed that EAIL drastically antagonized acetylcholine and histamine-induced contraction of goat tracheal chain, suggesting its anticholinergic and antihistaminic activity respectively. The duration of immobility, produced by clonidine, was found to be decreased in mice which showed its H1 receptor blocking activity. In milk-induced leucocytosis and eosinophilia in mice, EAIL significantly reduced the number of leucocytes and eosinophils suggesting its adaptogenic and anti-allergic potential. Inhibition of clonidine-induced mast cell degranulation in rats displayed its mast cell stabilizing potential. Reduction of paw edema in passive paw anaphylaxis exhibited antianaphylactic activity of EAIL. Guinea pigs were protected from histamine-induced bronchoconstriction by EAIL which revealed its bronchodilator potential. Furthermore, the histopathological architecture of lung tissue was near to normal.

Conclusion: Our results contribute towards validation of the traditional use of *Acalypha indica* in the treatment of asthma due to the presence of a wide range of phytoconstituents. Hence our investigation revealed that EAIL possessed strong antiasthmatic property by virtue of various mechanisms.

Sharma V, Bedi O, Gupta M, Deshmukh R. Review: traditional herbs and remedies impacting pathogenesis of Parkinson's disease. Naunyn Schmiedebergs Arch Pharmacol. 2022 May;395(5):495-513. doi: 10.1007/s00210-022-02223-5. Epub 2022 Mar 8. PMID: 35258640

Abstract:

Parkinson's disease (PD) is characterized by progressive degeneration of dopaminergic neurons, leading to misbalance and loss of coordination. Current therapies are claimed only for symptomatic relief, on long-term use, which causes alteration in basal ganglia, and give rise to various adverse effects like dyskinesia and extra pyramidal side effects, which is reversed and proved to be attenuated with the help of various herbal approaches. Therefore, in order to attenuate the dopaminergic complications, focus of current research has been shifted from dopaminergic to non-dopaminergic strategies. Herbs and herbal remedies seems to be a better option to overcome the complications associated with current dopaminergic therapies. In recent years, various herbs and herbal remedies based on Ayurveda, traditional Chinese and Korean remedies, have become the target of various researches. These herbs

and their bioactive compound are being extensively used to treat PD in India, China, Japan, and Korea. The major focus of this current review is to analyze preclinical studies with reference to various herbs, bioactive compounds, and traditional remedies for the management of Parkinson disorder, which will give an insight towards clinical trials.

Sharma V, Khuntia BK, Soneja M, Huddar VG, Ramakrishnan S, Sharma P et al. Efficacy of add-on Ayurveda and Yoga intervention in health care workers of tertiary care hospital during COVID-19: Randomized controlled trial. Complement Ther Clin Pract. 2022 May 8;48:101601. doi: 10.1016/j.ctcp.2022.101601. Online ahead of print. PMID: 35598547

Abstract:

Background: The present study aimed to evaluate the safety and prophylactic efficacy of add-on Comprehensive Ayurveda and mindfulness-based Yoga (CAY) regimen to standard care among HealthCare Workers (HCWs) against COVID-19.

Materials and methods: This prospective single-blind (outcome assessor-blinded) RCT was conducted in tertiary care hospital in Delhi during July 2020-April 2021. HCWs of both sexes were randomized to add-on CAY intervention or control group. The primary outcomes were the incidence of confirmed COVID-19 positive cases and influenza-like illness events (ILI). Secondary outcomes were anxiety (GAD-7), depression (PHQ-9), and quality of life (SF-36) at the end of 12 weeks.

Results: Three hundred fifty-six participants (181 in intervention and 175 in the control group) were randomized. With the modified intention to treat approach, we analyzed 309 participants. The mean age for the intervention and control group was 39.3 ± 10.1 and 36.6 ± 10 years, respectively. Incidence of COVID-19 event was higher in control group compared to CAY group (16 of 164 [9.8%] vs. 11 of 145 [7.6%]; $P = 0.50$). The incidence of ILI events was also higher in the control group as compared to the CAY group (14 of 164 [8.5%] vs 9 of 145 [6.2%]). The health change domain of the SF-36 questionnaire showed statistically significant improvement in the CAY group as compared to the control group ($P < 0.01$).

Conclusion: Incidence of COVID-19 and ILI events was lower in the CAY group compared with the control group, though the difference is not statistically significant.

Upadhyay A, Patel G, Pal D, Kumar A. Frequently Used Allopathic and Traditional Medicine for COVID-19 Treatment and Feasibility of Their Integration. Chin J Integr Med. 2022 May 4:1-8. doi: 10.1007/s11655-021-3512-5. Online ahead of print. PMID: 35507298

Abstract:

To date, no satisfactory treatment for COVID-19 is available. This review reported few recent updates regarding the drugs (allopathy/traditional medicines) used for the treatment of COVID-19 concerning clinical studies. Content of the article spotlight the contribution of allopathic and Ayurvedic drugs to the scientific basis for utilization as a potential therapy against COVID-19 infection and provide new insights on the integration of allopathy and traditional medicine. It advocated the combination of these two systems of treatment will ascertain their integrations, and there would be a good possibility and scope for developing a model of integration in the management of COVID-19. Provided discussion may help researchers, physicians, and healthcare policymakers to encourage for effective and integrated use of allopathic and Ayurvedic medicines to control the COVID-19 pandemic more effectively.

V KK, Ahmad A, Srivastava AK, Namdev Kamble P, Sudhakar D, Makhija P et al. Efficacy and Safety of Ayurveda interventions in the management of conjunctivitis: A systematic review and meta-analysis. Complement Ther Clin Pract. 2022 May;47:101568. doi: 10.1016/j.ctcp.2022.101568. Epub 2022 Mar 3. PMID: 35259570

Abstract:

Background: Conjunctivitis is the inflammation of the conjunctiva. Although data on clinical efficacy and safety of various ayurvedic treatments in conjunctivitis is published, systematic review is not done. This systematic review and meta-analysis aims to evaluate the efficacy and safety of ayurvedic treatments in conjunctivitis.

Methods: A literature search of the Cochrane Library (Cochrane central register of controlled trials: issue 6 of 12, June 2018), Pub Med, AYUSH research portal (Govt. of India), DHARA portal, Google scholar and online clinical trials registers was done. Randomized controlled trials (RCTs), quasi-randomized controlled trials (QRCTs), controlled clinical trials (CCTs) and multiple arms clinical trials were identified in which Ayurveda treatments with any dose, type, schedule, drug, dosage form, and advised Pathayapathya (lifestyle changes) were selected.

Results: We identified 13 eligible RCTs, five CCTs and two multiple arms clinical trials which includes a total of 816 participants. Meta analysis of data from five trials showed that ayurvedic treatments benefitted more compared with non-ayurveda interventions in symptoms like itching (SMD = -0.98, 95% CI (-1.30,-0.65) $p < 0.00001$, I² = 38%), pain (SMD = -0.57, 95% CI (-0.87, -0.29), $P = 0.0001$, I² = 0%), ropy discharge (SMD = -1.02, 95% CI(-1.45, -0.59), $P < 0.00001$, I² = 0%), conjunctival congestion (SMD = -0.67, 95% CI (-0.91, -0.43), $p < 0.00001$, I² = 0%), foreign body sensation (SMD = -0.68, 95% CI(-1.06, -0.29), $p = 0.0006$, I² = 46%, Fig. 8) and lid heaviness (SMD = -0.66, 95% CI(- 0.98, -0.33), $p < 0.0001$, I² = 0%).

Conclusions: Although some findings confirm the benefit of ayurveda as opposed to non ayurveda for the treatment of conjunctivitis, since the studies have high risk of bias and are of lower quality, the findings could not be generalized. There is a need for high quality studies in ayurveda in this regard.

Weng W, Goel A. Curcumin and colorectal cancer: An update and current perspective on this natural medicine. Semin Cancer Biol. 2022 May;80:73-86. doi: 10.1016/j.semcancer.2020.02.011. Epub 2020 Feb 20. PMID: 32088363

Abstract:

Colorectal cancer (CRC) is one of most common malignancies worldwide and its incidence is still growing. In spite of recent advances in targeted therapies, their clinical efficacy has been limited, non-curative and unaffordable. A growing body of literature indicates that CRC is a multi-modal disease, where a variety of factors within the tumor microenvironment play a significant role in its pathogenesis. For instance, imbalance in gut microbial profiles and impaired intestinal barrier function contribute to the overall intestinal inflammation and initiation of CRC. Moreover, persistent chronic inflammation favors a tumor microenvironment for the growth of cancer. In addition, autophagy or 'self-eating' is a surveillance mechanism involved in the degradation of cellular constituents that are generated under stressful conditions. Cancer stem cells (CSCs), on the other hand, engage in the onset of CRC and are able to endow cancer cells with chemo-resistance. Furthermore, the aberrant epigenetic alterations promote CRC. These evidences highlight the need for multi-targeted approaches that are not only safe and inexpensive but offer a more effective alternative to current generation of targeted drugs. Curcumin, derived from the plant *Curcuma longa*, represents one such option that has a long history of its use for a variety of chronic disease including cancer, in Indian ayurvedic and traditional Chinese medicine. Scientific evidence over the past few decades have overwhelmingly shown that curcumin exhibits a multitude of anti-cancer activities orchestrated through key signaling pathways associated with cancer. In this article, we will present a current update and perspective on this natural medicine - incorporating the basic cellular mechanisms it effects and the current state of clinical evidence, challenges and promise for its use as a cancer preventative and potential adjunct together with modern therapies for CRC patients.

Xia Y, Yan M, Wang P, Hamada K, Yan N, Hao H et al. Withaferin A in the Treatment of Liver Diseases: Progress and Pharmacokinetic Insights. Drug Metab Dispos. 2022 May;50(5):685-693. doi: 10.1124/dmd.121.000455. Epub 2021 Dec 13. PMID: 34903587

Abstract:

Withaferin A (WA) is a natural steroidal compound used in Ayurvedic medicine in India and elsewhere. Although WA was used as an anticancer reagent for

decades, its role in the treatment of liver diseases has only recently been experimentally explored. Here, the effects of WA in the treatment of liver injury, systematic inflammation, and liver cancer are reviewed, and the toxicity and metabolism of WA as well as pharmacological potentials of other extracts from *Withania somnifera* (*W. somnifera*) discussed. The pharmacokinetic behaviors of WA are summarized and pharmacokinetic insights into current progress and future opportunities are highlighted. SIGNIFICANCE STATEMENT: This review outlines the current experimental progress of Withaferin A (WA) hepatoprotective activities and highlights gaps in the field. This work also discusses the pharmacokinetics of WA that can be used to guide future studies for the possible treatment of liver diseases with this compound.

Yildirim N, Lale A, Yazıcı GN, Sunar M, Aktas M, Ozcicek A et al. Ameliorative effects of Liv-52 on doxorubicin-induced oxidative damage in rat liver. Biotech Histochem. 2022 May 9:1-6. doi: 10.1080/10520295.2022.2065533. Online ahead of print. PMID: 35527648

Abstract:

Hepatotoxicity is a common side effect of doxorubicin (Dox) treatment of cancer. Liv-52 is an ayurvedic medicine that is reported to ameliorate liver injury due to oxidative stress. We investigated the effects of Liv-52 on Dox induced oxidative damage to liver tissues of rats using biochemical and histopathological techniques. Thirty male rats were assigned randomly into three equal groups: control (CG), Dox group (DG) Liv-52 + Dox group (LD). Rats in the LD group received 50 mg/kg Liv-52 in distilled water via gastric gavage. Distilled water was given via the same route to the rats in the DG and CG groups. Rats in the LD and DG groups were injected intraperitoneally with 5 mg/kg Dox 1 h after administration of Liv-52 or distilled water. The procedure was repeated daily for 7 days. On day 8, the animals were sacrificed, and serum and tissue biochemical and histopathological assays were performed. The malondialdehyde level was increased significantly in the DG group, while glutathione and superoxide dismutase levels were significantly lower in the DG group compared to the LD and CG groups. The highest levels of alanine aminotransferase, aspartate aminotransferase and lactate dehydrogenase were found in the DG group, while the lowest levels were found in the CG group, which exhibited levels similar to those of the LD group. Treatment with Liv-52 prior to Dox treatment reduced the histopathologic changes in the Dox group. Therefore, pre-treatment with Liv-52 protected against Dox induced oxidative stress and hepatotoxicity.

UNANI MEDICINE

Ain Qurratul, Nawab Mohammad, Ahmad Tasleem, Kazmi Munawwar H, Naikodi Mohammed Abdul Rasheed. Evaluating the safety and efficacy of a polyherbal Unani formulation in dyslipidaemia-a prospective randomized controlled trial. J Ethnopharmacol 2022 May 10;289:115036. doi: 10.1016/j.jep.2022.115036. Epub 2022 Feb 1.

Abstract:

Ethnopharmacological relevance: Unani System of Medicine offers treatment for obesity and dyslipidaemia. Jawarish Falafili (JF) is a Unani polyherbal pharmacopoeial preparation. It has been used in the treatment of obesity for a long time. Dyslipidaemia is a recognised modifiable risk factor for hypertension, ischemic heart disease and stroke. Limitations of the current conventional therapy have provided scope for research of a potential drug in this medical condition. It was hypothesised that JF may ameliorate dyslipidaemia in human participants.

Aim of the study: The main objective of this study was to evaluate the safety and efficacy of the JF.

Materials and methods: This was a prospective randomized, active-controlled, open-label and parallel-group study. We randomized 74 participants of dyslipidaemia into treatment (n = 38) and control (n = 36) groups. Of them, 30 participants in each group completed the trial. The participants of any sex aged between 30 and 60 years, with serum total cholesterol (TC) ≥ 200 mg/dl and/or serum triglycerides (TG) ≥ 150 mg/dl and/or low-density lipoprotein cholesterol (LDL-C) level ≥ 130 mg/dl and/or high-density lipoprotein cholesterol (HDL-C) level < 40 mg/dl were enrolled in this study. The participants of the treatment group were treated with JF (10 gm/day) once and atorvastatin (20 mg/day) was given to the control group for 90 days once at night daily.

Results: We observed a significant reduction (treatment group versus control group) in mean serum TC by 22.89% versus 19.36%, TG by 29.90% versus 23.26% and LDL-C by 29.16% versus 27.92% from baseline ($p < 0.05$). But the change in mean serum HDL-C levels post-treatment was insignificant in both groups ($p > 0.05$). On intergroup comparison, the magnitude of the difference of mean TC, TG, LDL-C and HDL-C levels between the groups was not statistically significant ($p > 0.0005$).

Conclusions: This study concluded that JF and atorvastatin were equally effective in controlling dyslipidaemia. They were tolerated well by all participants and found safe during the course of treatment.

SIDDHA

Kanagavalli P, Pandey GR, Murugan P, Veerapandian M. Electrochemical and DFT studies of andrographolide on electrochemically reduced graphene oxide for anti-viral herbaceutical sensor. Anal Chim Acta. 2022 May 29;1209:339877. doi: 10.1016/j.aca.2022.339877. Epub 2022 Apr 25. PMID: 35569854

Abstract:

Herbal extracts are re-emerging as potential remedies for various vector-borne diseases. Amongst several phytochemicals, active ingredients of *Andrographis paniculata* extract is regarded as promising for dengue fever, caused by *Aedes* species. However, fingerprinting the active phytochemicals from herbal extracts are often relies on sophisticated analytical techniques which are not universally accessible. Herein, an electrochemically reduced graphene oxide on glassy carbon electrode (ErGO/GCE) has been devised as user-friendly and cost-effective sensor platform for fingerprinting of andrographolide (AG) in anti-dengue polyherbal formulation, i.e., Nilavembu kudineer powder. Confocal laser Raman and X-ray photoelectron spectral analyses revealed that the ErGO surfaces exert structural defects augmenting the conductivity at the electrode interface. DFT investigations enabled that C-3 and C-18 OH groups in AG is involved in the electrooxidation and adsorption-diffusion at the ErGO interface, respectively. Complementary electrochemical studies revealed that the diffusion-controlled process follows $1e^-/1H^+$ transfer. Under optimal experimental conditions, ErGO sensor platform exhibit an amplified current sensitivity of $13.3 \mu A \mu M^{-1} cm^{-2}$ in the studied analyte concentration range of $10-400 \mu M$. From the polyherbal extract and clinical sample analysis, the proposed sensor system offers selective, and sensitive detection of target AG regardless of common interferents.

Rakesh KV, Ashalatha SN, Mahima K, Baskar V, Thiruvengadam M. Untargeted Metabolomic Approach to Determine the Regulatory Pathways on Salicylic Acid-Mediated Stress Response in *Aphanamixis polystachya* Seedlings. Molecules. 2022 May 6;27(9):2966. doi: 10.3390/molecules27092966. PMID: 35566316

Abstract:

Plants thrive under abiotic and biotic stress conditions with the changes in phytohormones like salicylic acid (SA), resulting in the synthesis of secondary metabolites. The present study determines the response of plants in producing secondary metabolites towards different SA concentrations at varying time intervals. Liquid chromatography-mass spectrometry-based metabolomics studies in *Aphanamixis polystachya* (Wall.) Parker seedlings are grown at 10 mM, 50 mM, and 100 mM SA concentrations, showed the differential expression of metabolites towards the stress. Alkaloids like amaranthin

showed a 15-fold increase on the second day, and analog of androvinblastin showed a 20-fold increase on the sixth day in 10 mM SA compared with other groups. Flavanoid cyanidin 3-3 glucosyl was found to be with a 22-fold increment along with terpenoids betavulgaroside (18-fold), asiaticoside (17-fold), mubenin B (20-fold), and deslanoside (22-fold) increment in 50 mM SA on the sixth day. The shock exerted by 100 mM was too harsh, and the lowered metabolite production level was insufficient for the seedlings to survive at this higher SA condition. Arrangement of stressed groups using Pearson correlation studies, principal component analysis, and partial least square analysis placed 10 mM SA and controlled group closer and 50 mM SA and 100 mM SA groups closer to each other. The study observed that SA regulates metabolites that mediate biotic stress responses at low concentrations, and higher concentrations regulate abiotic stress regulating metabolites.

YOGA

Arigo D, Hevel D, Bittel K, Maher JP. Within-person examination of the exercise intention-behavior gap among women in midlife with elevated cardiovascular disease risk. *Psychol Sport Exerc.* 2022 May;60:102138. doi: 10.1016/j.psychsport.2022.102138. Epub 2022 Jan 24. PMID: 35531355

Abstract:

Engaging in moderate-to-vigorous intensity physical activity (MVPA) is important for protecting cardiovascular health among women in midlife (i.e., ages 40-60), particularly if they have already developed conditions that increase their risk for cardiovascular disease (e.g., hypertension). Although the gap between MVPA intentions and behavior is well documented in other populations, little is known about the intention-behavior gap in this at-risk group - particularly as it plays a role in daily life. The present study employed an ecological momentary assessment design to examine the relation between women's MVPA intentions and behavior in the subsequent 3 hours, as well as momentary moderators of this relation (i.e., affective states and body satisfaction). Surveys sent to women's smartphones 5 times per day for 10 days while they wore ActiGraph GT3X waistband accelerometers. Women achieved their exercise intentions at only 13% of occasions on which they set intentions. Although the most common intended exercise was walking, women engaged in more minutes of MVPA after setting intentions to do yoga or Pilates than any other type of exercise ($sr = 0.25$). Multilevel models showed a modest within-person relation between minutes of intended MVPA and observed MVPA in the next 3 hours ($sr = 0.20$). This relation was moderated within-person by the reported extent of positive affect (particularly contentment) and body satisfaction ($srs = 0.35$ and 0.28 , respectively). Findings extend knowledge about the physical activity intention-behavior gap to an at-risk population of women and identify positive affect and body satisfaction as potential contextual influences for this group, which could inform improvements to existing interventions (e.g., delivering intervention content at times with lower-than-usual body satisfaction).

Barr N, Petering R, Onasch-Vera L, Thompson N, Polsky R. MYPATH: A novel mindfulness and yoga-based peer leader intervention to prevent violence among youth experiencing homelessness. *J Community Psychol.* 2022 May;50(4):1952-1965. doi: 10.1002/jcop.22661. Epub 2021 Jul 8. PMID: 34237153

Abstract:

Young adults experiencing homelessness (YAEH) are at elevated risk for violence victimization and perpetration. However, there are no evidence-based violence prevention interventions for homeless populations. This study is an

evaluation of a novel mindfulness-based peer-leader intervention designed to reduce violence and improve mindfulness in YAEH. A social network of YAEH receiving services at a drop-in agency was recruited in Summer 2018 (n = 106) and peer-leaders identified at baseline (n = 12). Peer leaders were trained in mindfulness and yoga skills during a 1-day intensive workshop and seven 1-h weekly follow-up workshops and encouraged to share their knowledge with in-network peers. Postintervention data were collected 2 and 3 months after baseline. Two one-way repeated-measures analyses of variance (ANOVAs) tested differences in means for mindfulness and fighting. ANOVA models showed significant increases in group mean mindfulness $F(2, 110) = 3.42, p < 0.05$ and significant decreases in group mean violent behavior $F(2, 112) = 5.23, p < 0.01$ at the network level. Findings indicate a network-based, peer-leader model can be effective for influencing complex, socially conditioned attitudes and behaviors among YAEH. Additional advantages of the peer-leader model include relatively few direct-service person-hours required from providers and convenience to participants able practice skills in their relevant social contexts.

Bhatia T, Kumari N, Yadav A, Beniwal RP, Shah G, Wood J et al. Feasibility, acceptability and evaluation of meditation to augment Yoga practice among persons diagnosed with schizophrenia. Acta Neuropsychiatr. 2022 May 19:1-37. doi: 10.1017/neu.2022.14. Online ahead of print. PMID: 35586878

Abstract:

Objective: To design a meditation protocol and test its feasibility, acceptability and efficacy in conjunction with YT for persons with schizophrenia (SZ).

Methods: The meditation protocol consisted of Anapana (observing normal respiration) and Yoga Nidra (supine, restful awareness). In a single blind randomized controlled trial, medicated and clinically stable outpatients diagnosed with SZ were randomized to receive treatment as usual (TAU), TAU augmented with yoga training (YT), or TAU augmented with meditation and yoga training (MYT) for three weeks (N=145). Acceptability, clinical, social and cognitive functions were assessed after 3 weeks and 3 months post randomization using within group and between groups analyses with repeated measures multivariate tests.

Results: No group-wise differences in compliance, study discontinuation, major/serious side effects or adverse events were noted. For six assessed clinical variables, the direction of changes were in the desired direction and the effect sizes were greater in the MYT group compared with the TAU group at both time points. Changes in social function variables were greater at 3 months than at 3 weeks. Nominally significant improvement in individual cognitive domains were noted in all groups at both time points. All effect sizes were in the small to medium range.

Conclusion: MYT is feasible, acceptable and shows modest benefits for persons with SZ. MYT can also improve quality of life and clinical symptoms. Larger studies of longer duration are warranted.

Bringmann HC, Michalsen A, Jeitler M, Kessler CS, Brinkhaus B, Brunnhuber S et al. Meditation-based lifestyle modification in mild to moderate depression-A randomized controlled trial. *Depress Anxiety*. 2022 May;39(5):363-375. doi: 10.1002/da.23249. Epub 2022 Mar 21. PMID: 35312137

Abstract:

Objective: Depression is a global key challenge in mental health care. The implementation of effective, low-risk and cost-effective interventions to reduce its disease burden is a necessity. The aim of this study was to investigate the efficacy of the new Meditation-Based Lifestyle Modification (MBLM) program, a "second-generation" mindfulness-based intervention, in depressive outpatients.

Methods: Eighty-one patients with mild to moderate depression were randomized into three groups: intervention group (MBLM), control group (CONTROL), and treatment as usual group (TAU). The primary outcome was the change of depressive symptoms as administered by the Beck Depression Inventory-II (BDI-II) after 4 and 8 weeks. Secondary outcome variables included the Brief Symptom Checklist-18 and the Perceived Stress Scale-10. A 6-month follow-up was conducted.

Results: A greater reduction of depressive symptoms was found in MBLM participants compared to CONTROL ($p < .001$, $\eta^2 = 0.11$, $d = 0.70$) and TAU ($p < .001$, $\eta^2 = 0.10$, $d = 0.67$) with a 13.15 points reduction of BDI-II score versus 1.71 points (CONTROL) and 3.34 points (TAU) after 8 weeks. Between-group post hoc tests for all secondary outcomes and at follow-up also yielded significant between-group differences with medium to large effect sizes in favor of MBLM.

Conclusions: Study results showed beneficial effects of MBLM in depressed outpatients. Further high-quality controlled clinical studies including qualitative research are needed to investigate the specific and unspecific effects of the MBLM program in depression and other medical conditions.

Chao HT, Chang PC, Lin YK, Huang WC, Wu CC, Chang LI et al. Longitudinal Effects of a Combined Program of Pelvic Floor Muscle Training and Yoga on Genitourinary Symptoms in Asian Women of Older Age: A Randomized Experimental Study. *Geriatr Nurs*. 2022 May 18;46:27-38. doi: 10.1016/j.gerinurse.2022.04.018. Online ahead of print. PMID: 35597057

Abstract:

This parallel-two-group randomized experimental study including a supervised group and an unsupervised group examined the longitudinal effects of pelvic floor muscle training (PFMT) combined with yoga on genitourinary symptoms and the health-related quality of life (HRQOL), and compared practice adherence rates of the two groups. A sample of women experiencing ≥ 1 genitourinary symptom(s) were recruited and assigned to a supervised group or an unsupervised group. The supervised group attended supervised group practice sessions and performed at-home practice of PFMT and yoga. The unsupervised group performed at-home practice of PFMT and yoga. Information was collected at five time points ($n = 91$). Generalized estimating equation procedures were used to examine the intervention effects. An independent t-test was conducted to compare the practice adherence rates. Both groups' genitourinary symptoms and HRQOL significantly improved over time. The supervised group displayed greater improvements in genitourinary symptoms and HRQOL and better adherence than did the unsupervised group.

Clarke RD, Morris SL, Wagner EF, Spadola CE, Bursac Z, Fava NM et al. Feasibility, acceptability and preliminary impact of mindfulness-based yoga among Hispanic/Latinx adolescents. *Explore (NY)*. 2022 May-Jun;18(3):299-305. doi: 10.1016/j.explore.2021.03.002. Epub 2021 Mar 9. PMID: 33741254

Abstract:

Background: The Hispanic/Latinx population constitutes the fastest growing ethnic/racial minority group in the United States (U.S.). Compared to their non-Hispanic/Latinx White counterparts, Hispanic/Latinx youth experience more depression and anxiety, and have more unmet mental health needs (88% vs 76%). Emerging research supports the psychological and physical benefits of mind-body awareness training to enhance well-being and mental health, but almost no studies have recruited ethnic/racial minority samples.

Purpose: The current study examined the feasibility, acceptability and preliminary impact of a mindfulness-based yoga program among Hispanic/Latinx public high school students.

Procedures: Participants ($N = 187$) were recruited from a local public high school in a large multi-ethnic urban school district in the Southeast U.S. and participated in 6 weekly hour-long sessions of mindfulness-based yoga. Participants completed assessments at pretest and one month after program completion.

Main findings: The sample was predominantly Hispanic/Latinx (95%) and female (64%), on average 15.2 years old ($SD = 1.3$), and 51% were born outside the U.S. Participants reported on average a 14.2% reduction in depressive symptoms (pretest mean = 5.51, posttest mean = 4.73, $p = .032$, Cohen's $d = 0.2$), a 14.9% reduction in anxiety symptoms (pretest mean = 9.90, posttest mean = 8.42, $p = .005$, Cohen's $d = 0.2$), and a 21.9% reduction in stress (pretest mean = 9.66, posttest mean = 7.54, $p < .001$, Cohen's $d = 0.5$).

Conclusion: These findings provide support for the effectiveness of a mindfulness-based yoga program for Hispanic/Latinx adolescents, a medically underrepresented group experiencing significant mental health disparities.

Daniel John M, Taylor EJ. Beyond Turmeric and Yoga: Advance Care Planning and End-of-Life Considerations Among Asian Indian American Hindus. J Hosp Palliat Nurs. 2022 May 13. doi: 10.1097/NJH.0000000000000880. Online ahead of print. PMID: 35560304

Abstract:

Hinduism is the fourth largest religion in the United States; an understanding of Hindu beliefs and practices will help health care providers deliver culturally sensitive care while discussing advance care planning and end-of-life care for adult patients. For many Westerners, the practice of yoga, Ayurveda, and vegetarianism is used by people striving to live healthfully. However, what might be unfamiliar to Westerners is how for Hindus, these practices reflect their millennia-old spirituality and religiosity. Knowing the Hindu beliefs of atman, Brahman, karma, and moksha will help nurses connect to Hindus' various end-of-life wishes. In addition, getting familiar with interrelating factors such as lack of knowledge on palliative care and advance care planning, family dynamics, acculturation, and personal preferences will allow nurses to provide culturally competent care. By facilitating end-of-life conversations at an early stage, nurses can promote confidence and self-efficacy for patients who may fear that their religiosity and personal priorities are trivialized by acculturated family members or disregarded by their adopted homeland. This clinical article provides nurses with information about Asian Indian American Hindus' beliefs and practices, clinical implications for assessment, and suggestions to support patients' and families' end-of-life wishes.

Dulger E, Mut M, Erbas T, Sahiner L, Vardar Yaglı N, Bilgin S. Effects of combined aerobic-strength training and yoga on quality of life and related parameters in women with pituitary adenoma after surgery: A randomized crossover study. Eur J Endocrinol. 2022 May 2;186(6):667-675. doi: 10.1530/EJE-22-0031. PMID: 35380988

Abstract:

Objective: The pituitary gland is responsible for hormonal balance in the body, and disruption of hormonal balance in patients with pituitary adenoma (PA) indirectly affects the quality of life. This study aimed to examine the effects of yoga and combined aerobic and strength training (A+ST) on quality of life and related parameters such as sleep, fatigue, emotional state, sexual function, and cognitive status in women with PA.

Design: Ten women with PA were included in this randomized crossover study. Group 1 (n = 5, mean age: 52 ± 13.5 years) received A+ST for the first 6 weeks,

a 2-week washout period, and yoga for the second 6 weeks. Group 2 (n = 5, mean age: 41.8 ± 14 years) received the yoga program first, followed by the A+ST program.

Methods: Participants were assessed using the following tools before and after each exercise intervention: Functional Assessment of Cancer Therapy-Brain (FACT-Br) (quality of life), Pittsburg Sleep Quality Index, Fatigue Severity Scale (FSS), Female Sexual Function Index (FSFI), Hospital Anxiety and Depression Scale (HADS), and Montreal Cognitive Assessment Scale (MOCA).

Results: FACT-Br scores were higher after the yoga program, HADS anxiety score was lower after the A+ST program, and MOCA scores increased after both exercise programs (P < 0.05). FSS score decreased after both exercise programs, but not significantly. In addition, nonsignificant decreases in HADS anxiety and depression scores and increased FSFI scores were observed after the yoga program.

Conclusion: A+ST and yoga have positive effects on the quality of life in PA. We recommend yoga and A+ST as a supportive therapy for this population that may face comorbidities after surgical and medical treatment. Our results indicate these patients may benefit from physiotherapist-guided exercise programs.

Dunn N, Esplin JA, Fitzgerald M. Moving out of your mind and into your body: Yoga buffers the effects of childhood maltreatment on PTSD symptoms. J Am Coll Health. 2022 May 12:1-7. doi: 10.1080/07448481.2022.2066956. Online ahead of print. PMID: 35549992

Abstract:

Objective: Childhood maltreatment has been consistently linked to posttraumatic stress disorder (PTSD) symptoms among college students and yoga may buffer the effects. The current study examined the frequency of college student's yoga practice over the past year as a moderator of childhood maltreatment and PTSD symptoms in the past 30 days.

Participants: A sample of 177 college students from a southern university.

Methods: Participants completed an online survey in exchange for extra credit or entry into a gift card raffle.

Results: Moderation analysis indicated that a more frequent yoga practice buffered the relationship between maltreatment and PTSD symptoms.

Conclusion: Clinicians working with college students with a history of maltreatment are encouraged to make referrals to yoga classes. Universities are encouraged to adopt trauma-sensitive yoga programs.

GM Dos Santos, R Verlengia, AGSV Ribeiro, CA Correa, Ciuldim M, AH Crisp. Yoga and mental health among Brazilian practitioners during COVID-19: An internet-based cross-sectional survey. Sports Med Health Sci. 2022 May 7. doi: 10.1016/j.smhs.2022.04.005. Online ahead of print. PMID: 35574287

Abstract:

This study aimed to describe yoga practice and verify its association with depression, anxiety, and stress during the COVID-19 pandemic among Brazilian practitioners. A cross-sectional anonymous online survey was conducted in all regions of Brazil using a snowball sampling strategy among yoga practitioners. A total of 860 participants (87% female, aged: 19-82 years) completed the survey. Sociodemographic data, lifestyle factors, yoga practice during the pandemic, and the Depression Anxiety and Stress Scale (DASS-21) scores were collected between July 9 and July 15, 2021. Overall, 9.5%, 9.3%, and 5.6% of participants exhibited some traits (mild to severe) of depression, anxiety, and stress, respectively. Hatha yoga (48%) was the most commonly practiced yoga style. In the adjusted analysis, a higher yoga experience (> 5 years) was associated with better anxiety (odds ratio; bootstrap 95% confidence interval: 2.42; 1.32, 4.49) and stress status (1.80; 1.06, 3.00) than beginners (< 1 year). Practitioners who reported higher time and days of yoga practice during the study period were more likely to show normal levels of depression (odds ratio: 2.56-6.49; $p < 0.05$), anxiety (odds ratio: 3.68-8.84; $p < 0.05$), and stress (odds ratio: 2.15-5.21; $p < 0.05$). Moreover, the maintenance of practice frequency during the pandemic was associated with higher odds of normal levels of depression (2.27; 1.39-3.79), anxiety (1.97; 1.25-3.10), and stress (1.97; 1.32-2.96). In conclusion, our findings indicated that a higher level of yoga practice was associated with better mental health levels during the COVID-19 pandemic.

Joyce CT, Chernofsky A, Lodi S, Sherman KJ, Saper RB, Roseen EJ. Do physical therapy and yoga improve pain and disability through psychological mechanisms? A causal mediation analysis of adults with chronic low back pain. J Orthop Sports Phys Ther. 2022 May 18:1-31. doi: 10.2519/jospt.2022.10813. Online ahead of print. PMID: 35584010

Abstract:

Objective: To investigate whether indirect effects via psychological mechanisms explain the effects of physical therapy (PT) or yoga, versus education, on back-related outcomes.

Design: Mediation analyses using data from a randomized controlled trial of PT, yoga, and education interventions for chronic low back pain.

Methods: Primary outcomes were changes in back-related pain on the 11-point numerical rating scale and disability on the modified 23-point Roland Morris Disability Questionnaire, measured at 52-weeks post-randomization.

Hypothesized mediators were 12-week changes in pain self-efficacy, fear avoidance beliefs, depression, anxiety, perceived stress, and sleep quality. We used causal mediation analysis to estimate the total effect, direct effect, indirect effect, and proportion mediated.

Results: We analyzed data from 230 adults (mean age = 46.2 years, 69.6% female, 79.6% non-white). In the PT versus education model, when the mediator was perceived stress, the total effect on disability was 2.6 points (95% CI: 0.3, 4.9) and decomposed into a direct effect of 1.7 points (95% CI: -0.4, 3.8) and an indirect effect 0.9 points (95% CI: 0.1, 2.0; proportion mediated 34%). No other psychological construct was a significant mediator.

Conclusion: Improvements in perceived stress mediated improvements in disability after PT treatment compared to education. Other psychological outcomes did not mediate the effect of yoga or PT on pain or disability outcomes compared to education. *J Orthop Sports Phys Ther*, Epub 18 May 2022. doi:10.2519/jospt.2022.10813.

Kanchibhotla D, Gupte P, Harsora P, Kulkarni S. Impact of Prajñā yoga on cognition in adolescents with congenital and adventitious visual impairment. Explore (NY). 2022 May-Jun;18(3):313-318. doi: 10.1016/j.explore.2021.05.010. Epub 2021 Jul 5. PMID: 34301513

Abstract:

Context: Numerous scientific studies have investigated the impact of yoga on cognition in children and adults. However, fewer studies have assessed the impact of yogic practices on cognition in children and adolescents with visual impairment. Despite their keen intellectual abilities and advanced linguistic skills, teens with visual impairment often experience difficulties with cognitive control and behavioral regulation. Memory plays an important role in cognition. Besides storing information, memory is also used for recall, defined as the retrieval of information the brain has recently been exposed to, and recognition, defined as the ability to recognize or retrieve the information previously encountered and stored in the brain.

Objective: The objective of the study was to observe the effectiveness of Prajñā Yoga on enhancing the cognition and verbal memory in adolescents with visual impairment. Degree of visual impairment and age of onset of visual impairment were considered while analyzing the study data.

Design: An open-trial, single arm, pre-post study design was adopted. 273 adolescents with visual impairment were assessed across India using the Rey Auditory Verbal Learning Test (RAVLT), at baseline (before the intervention), immediately after the intervention, and at 40 days after the intervention. RAVLT measures recall and recognition through verbal memory.

Intervention: Prajna Yoga (PY) or the Art of Living Intuition Program is a unique intervention, based on ancient techniques of Pranayama, Super Brain

Yoga, and Meditation, taught to children & adolescents between the ages 5 and 17.

Results: The mean scores for Recognition ($p=0.011$) and Immediate recall ($p=0.011$) improved significantly after PY for the entire study population, regardless of the degree of visual impairment, gender and age of onset. A significant improvement in mean scores for Delayed Recall was seen after 40 days of daily practice ($p = 0.007$).

Kaur S, D'Silva A, Rajagopalan V, Kumar A, Jijon H, Panaccione R et al. Evaluation of an integrated yoga program in patients with inflammatory bowel disease: A pilot study. Explore (NY). 2022 May-Jun;18(3):335-341. doi: 10.1016/j.explore.2021.04.006. Epub 2021 May 4. PMID: 34210638

Abstract:

Background: The effects of integrated yoga programs on mental health outcomes in inflammatory bowel disease (IBD) have not been well explored. To explore the acceptability, implementation and effectiveness of an integrated eight-week yoga program plus aromatherapy massage in patients with IBD.

Methods: Nine participants with documented IBD were recruited from a gastroenterology clinic in Calgary, Alberta, Canada to participate in an integrated yoga program weekly for eight weeks with outcomes assessed at baseline and week 8. Primary outcomes were assessed using Theory of Planned Behaviour as a guiding theory to identify salient beliefs from qualitative analysis of a semi-structured interview, survey items measuring the strength of beliefs and a daily log was used to capture adherence and adverse events. Secondary outcomes were collected using validated survey tools examining anxiety, depression, stress, sleep quality, and physical and mental quality of life.

Results: Attitude, subjective norm and perceived behavioral control beliefs pertinent to the yoga intervention and daily practice were identified. Participants reported feeling the intervention was very helpful; however, felt guilt about not completing daily practices which decreased confidence and intention to continue with the practice. An average of 55.6% of in-person sessions were attended and decreased over time. Participants practiced on average of 5.4 days per week. Depression and mental health scores improved at week 8 from baseline.

Conclusions: We were able to identify key salient beliefs of IBD patients in regard to an integrated yoga plus aromatherapy massage intervention. This intervention appears to be acceptable and further research should explore its potential to improve mental and physical health outcomes including IBD symptoms.

Mishra P, Harris T, Greenfield SM, Hamer M, Lewis SA, Singh K et al. Feasibility Trial of Yoga Programme for Type 2 Diabetes Prevention

(YOGA-DP) among High-Risk People in India: A Qualitative Study to Explore Participants' Trial- and Intervention-Related Barriers and Facilitators. Int J Environ Res Public Health. 2022 May 1;19(9):5514. doi: 10.3390/ijerph19095514. PMID: 35564908

Abstract:

Yoga-based interventions can be effective in preventing type 2 diabetes mellitus (T2DM). We developed a Yoga programme for T2DM prevention (YOGA-DP) and conducted a feasibility randomised controlled trial (RCT) among high-risk people in India. This qualitative study's objective was to identify and explore participants' trial- and intervention-related barriers and facilitators. The feasibility trial was conducted at two Yoga centres in New Delhi and Bengaluru, India. In this qualitative study, 25 trial participants (13 intervention group, 12 control group) were recruited for semi-structured interviews. Data were analysed using deductive logic and an interpretative phenomenological approach. Amongst intervention and control participants, key barriers to trial participation were inadequate information about recruitment and randomisation processes and the negative influence of non-participants. Free blood tests to aid T2DM prevention, site staff's friendly behaviour and friends' positive influence facilitated trial participation. Amongst intervention participants, readability and understanding of the programme booklets, dislike of the Yoga diary, poor quality Yoga mats, difficulty in using the programme video, household commitment during home sessions, unplanned travel, difficulty in practising Yoga poses, hesitation in attending programme sessions with the YOGA-DP instructor of the opposite sex and mixed-sex group programme sessions were key barriers to intervention participation. Adequate information was provided on T2DM prevention and self-care, good venue and other support provided for programme sessions, YOGA-DP instructors' positive behaviour and improvements in physical and mental well-being facilitated intervention participation. In conclusion, we identified and explored participants' trial- and intervention-related barriers and facilitators. We identified an almost equal number of barriers (n = 12) and facilitators (n = 13); however, intervention-related barriers and facilitators were greater than for participating in the trial. These findings will inform the design of the planned definitive RCT design and intervention and can also be used to design other Yoga interventions and RCTs.

Sarika KS, Balakrishnan V, Kumar H, Sundaram KR. Psycho-physio-biochemical modulations brought by Integrated Amrita Meditation (IAM®) relieved stress and improved glycemetic control in type 2 diabetic subjects. J Tradit Complement Med. 2021 Aug 9;12(3):235-242. doi: 10.1016/j.jtcme.2021.08.005. eCollection 2022 May. PMID: 35493306

Abstract:

Background and objectives: In type 2 diabetic subjects, psychological stress worsens glycemetic regulation. This study put forward the various psychophysiological and biochemical benefits of the Integrated Amrita

Meditation (IAM®) technique in type 2 diabetic subjects in achieving a better quality of life.

Methods: This was a clinical trial conducted in the Endocrinology department of Amrita Institute of Medical Sciences. 85 type 2 diabetic subjects between the age group of 30-65 years were recruited for the study. They were randomly allocated to IAM (n = 43) and the control group (n = 42). All the physiological, biochemical, and psychological variables were assessed at baseline, 3 months, and 6 months.

Results: Within the experimental group there was statistically significant reduction in heart rate, respiratory rate, blood pressure, fasting blood glucose, HbA1c, insulin and insulin resistance ($p < 0.05$). The average percentage changes of these variables between the groups were also significant. HDL showed an increase within the IAM®group ($p < 0.001$) while there was an increase in LDL and total cholesterol in the control group. Between the groups, the mean percentage changes in stress hormones cortisol and adrenaline were also significant. IgA ($p = 0.002$) and GABA ($p = 0.007$) significantly increased in the experimental group. Psychological stress assessed by perceived stress scale also showed a significant drop after the intervention in the test group and the change in perceived stress was again significant between the 2 groups comparison.

Conclusion: Along with the standard treatment regimens, diabetic patients can incorporate mind-body relaxation techniques as an effective adjunctive therapy.

Sarkar S, Choi YK, Kim KK. Structured Review and Evaluation of Android Mobile Applications for Yoga Support. Stud Health Technol Inform. 2022 May 16;292:75-78. doi: 10.3233/SHTI220325. PMID: 35575852

Abstract:

Although there are hundreds of mobile yoga apps in the app market space, the quality and usefulness of these apps have not been systematically tested. We conducted a structured quality evaluation of apps from the Google Play store, applying the validated Mobile Application Rating Scale (MARS) by two independent raters. 18 out of 250 apps were identified for evaluation after applying inclusion/exclusion criteria. The mean MARS score is 4.11 (out of 5) with SD = 0.38. There was high interrater reliability (ICC = .88; 95% CI 0.85-0.91). Apps performed well on functionality and aesthetics. However, there is much room for improvement in information and engagement. Designers and researchers should focus on improving user engagement and building the evidence base for informational content provided in apps.

Sharma H, Raj R, Juneja M. Empirical comparison of machine learning algorithms for the classification of brain signals to assess the impact of combined yoga and Sudarshan Kriya. Comput Methods Biomech Biomed

Engin. 2022 May;25(7):721-728. doi: 10.1080/10255842.2021.1975682. Epub 2021 Dec 4. PMID: 34866497

Abstract:

Today's fast paced life reports so much stress among people that it may lead to various psychological and physical illnesses. Yoga and meditation are the best strategies to reduce the effect of stress on physical and mental level without any side-effects. In this study, combined yoga and Sudarshan Kriya (SK) has been used as an alternative and complementary therapy for the management of stress. The aim of the study is to find a method to classify the meditator and non-meditator states with the best accuracy. The 50 subjects have been participating in this study and divided into two groups, i.e. study and control group. The subjects with regular practice of Yoga and SK are known as meditators and the ones without any practice of yoga and meditation were known as non-meditators. Electroencephalogram (EEG) signals were acquired from these both groups before and after 3 months. The statistical parameters were computed from these acquired EEG signals using Discrete Wavelet Transform (DWT). These extracted statistical parameters were given as input to the classifiers. The decision tree, discriminant analysis, logistic regression, Support Vector Machine (SVM), Weighted K- Nearest Neighbour (KNN) and ensemble classifiers were used for classification of meditator and non- meditator states from the acquired EEG signals. The results have demonstrated that the SVM method gives the highest classification accuracy as compared to other classifiers. The proposed method can be used as a diagnosis system in clinical practices.

Sinclair KL, Kiser E, Ratcliff CG, Chaoul A, Hall MH, Rinpoche TW et al. Sleep moderates the effects of Tibetan yoga for women with breast cancer undergoing chemotherapy. Support Care Cancer. 2022 May;30(5):4477-4484. doi: 10.1007/s00520-022-06861-6. Epub 2022 Feb 2. PMID: 35107599

Abstract:

This study examined self-reported and actigraphy-assessed sleep and depression as moderators of the effect of a Tibetan yoga intervention on sleep and depression among women undergoing chemotherapy for breast cancer. This is a secondary analysis of an RCT examining a 4-session Tibetan yoga program (TYP; n = 74) versus stretching program (STP; n = 68) or usual care (UC; n = 85) on self-reported sleep (Pittsburgh Sleep Quality Index (PSQI), actigraphy-assessed sleep efficiency (SE)) and depression (Centers for Epidemiological Studies Depression Scale; CES-D) for women undergoing chemotherapy for breast cancer. Data were collected at baseline and 1-week and 3-month post-intervention. Baseline PSQI, actigraphy-SE, and CES-D were examined as moderators of the effect of group on PSQI, actigraphy-SE, and CES-D 1 week and 3 months after treatment. There was a significant baseline actigraphy-SE × group effect on PSQI at 1 week (p < .001) and 3 months (p = .002) and on CES-D at 3 months (p = .049). Specifically, the

negative association of baseline actigraphy-SE with subsequent PSQI and CES-D was buffered for women in the TYP and, to a lesser extent in STP, compared to those in the UC. Baseline PSQI and CES-D were not significant moderators of the effect of group on any outcome. Behaviorally assessed sleep may be a more robust indicator of which patients are most appropriate for a yoga intervention than self-reported sleep quality. Women with poor sleep efficiency may derive the greatest benefit in terms of sleep quality and mood from a yoga intervention.

Singh Khalsa SB. Kundalini yoga and kundalini awakenings. Complement Ther Clin Pract. 2022 May;47:101417. doi: 10.1016/j.ctcp.2021.101417. Epub 2021 May 18. PMID: 34030978

Wu Q, Liu P, Liao C, Tan L. Effectiveness of yoga therapy for migraine: A meta-analysis of randomized controlled studies. J Clin Neurosci. 2022 May;99:147-151. doi: 10.1016/j.jocn.2022.01.018. Epub 2022 Mar 10. PMID: 35279587

Abstract:

Introduction: The efficacy of yoga therapy for migraine remains controversial. We conduct this meta-analysis to explore the influence of yoga therapy on the treatment efficacy of migraine.

Methods: We have searched PubMed, EMBASE, Web of Science, EBSCO and Cochrane library databases through February 2021, and included randomized controlled trials (RCTs) assessing the efficacy of yoga therapy for migraine attack.

Results: Five RCTs involving 356 patients were included in the meta-analysis. Overall, compared with control group for migraine, yoga therapy was associated with substantially reduced headache frequency (SMD = -1.43; 95% CI = -2.23 to -0.64; P = 0.0004) and HIT-6 score (SMD = -2.19; 95% CI = -4.09 to -0.28; P = 0.02), but revealed no obvious influence on pain intensity (SMD = -1.37; 95% CI = -2.76 to 0.01; P = 0.05) or McGill Pain Questionnaire (SMD = -2.09; 95% CI = -6.39 to 2.22; P = 0.34).

Conclusions: Yoga therapy may benefit to reduce the headache frequency of migraine patients.

Yildirim P, Gultekin A. Effect of a Stretch and Strength-Based Yoga Exercise Program on Patients with Neuropathic Pain due to Lumbar Disc Herniation. Spine (Phila Pa 1976). 2022 May 15;47(10):711-719. doi: 10.1097/BRS.0000000000004316. Epub 2022 Jan 11.

Abstract:

Study design: Randomized controlled trial.

Objective: To investigate the effect of a stretch and strength-based yoga exercise program on neuropathic pain due to LDH.

Summary of background data: LDH with neuropathic pain influences treatment outcomes negatively. Most yoga poses include the parameters of spinal training and help reduce pain and disability in patients with low back injuries. We hypothesized that yoga positively affects both LDH and neuropathic pain by increasing mobilization, core muscle strength, and spinal and hamstring flexibility.

Methods: In total, 48 patients with neuropathic pain due to LDH were randomly assigned to a control group and a yoga group. All patients underwent a patient education program. In addition, the selected yoga exercise was taught and performed to the yoga group for one hour twice weekly for 12 weeks. Neuropathic pain (Douleur Neuropathique 4 for diagnosis; Leeds Assessment of Neuropathic Symptoms and Signs for severity), low back pain (the short-form of McGill Pain Questionnaire), disability (Oswestry Disability Index), and function (modified Schober and passive knee extension test) were measured blind before and at the one-, three-, and six-month follow-ups. The patient global assessment was applied at the six-month followup. The intention-to-treat analysis was performed in this study.

Results: The intention-to-treat analysis showed a statistically significant difference in neuropathic pain, patient global assessment, low back pain, disability, and function in favor of the yoga group at post-treatment. The between-group effect sizes were moderate at six-months follow-up.

Conclusion: It was determined that the selected stretch and strength-based yoga exercise could be a promising treatment option for neuropathic pain due to LDH.