

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

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(Meenakshi Bhatia)
Junior Librarian

HOMOEOPATHY

Corrao S, Natoli G. Case of homeopathy, "how to search PubMed" may be a first step. *Eur J Intern Med.* 2017; 41:e8-e9.

Ebert F, Staufenbiel R, Simons J et al. Randomized, blinded, controlled clinical trial shows no benefit of homeopathic mastitis treatment in dairy cows. *J Dairy Sci.* 2017; 100(6):4857-67p.

Abstract:

Mastitis is one of the most common diseases in dairy production, and homeopathic remedies have been used increasingly in recent years to treat it. Clinical trials evaluating homeopathy have often been criticized for their inadequate scientific approach. The objective of this triple-blind, randomized controlled trial was to assess the efficacy of homeopathic treatment in bovine clinical mastitis. The study was conducted on a conventionally managed dairy farm between June 2013 and May 2014. Dairy cows with acute mastitis were randomly allocated to homeopathy (n = 70) or placebo (n = 92), for a total of 162 animals. The homeopathic treatment was selected based on clinical symptoms but most commonly consisted of a combination of nosodes with *Streptococcinum*, *Staphylococcinum*, *Pyrogenium*, and *Escherichia coli* at a potency of 200c. Treatment was administered to cows in the homeopathy group at least once per day for an average of 5 d. The cows in the placebo group were treated similarly, using a placebo preparation instead (lactose globules without active ingredients). If necessary, we also used allopathic drugs (e.g., antibiotics, udder creams, and anti-inflammatory drugs) in both groups. We recorded data relating to the clinical signs of mastitis, treatment, time to recovery, milk yield, somatic cell count at first milk recording after mastitis, and culling. We observed cows for up to 200 d after clinical recovery. Base-level data did not differ between the homeopathy and placebo groups. Mastitis lasted for an average of 6 d in both groups. We observed no significant differences in time to recovery, somatic cell count, risk of clinical cure within 14 d after disease occurrence, mastitis recurrence risk, or culling risk. The results indicated no additional effect of homeopathic treatment compared with placebo. The advantages or disadvantages of homeopathy should be carefully assessed for individual farms.

Falkowski-Temporini GJ, Lopes CR, Massini PF et al. Increased of the hepatocytes and splenocytes apoptosis accompanies clinical improvement and higher survival in mice infected with *Trypanosoma cruzi* and treated with highly diluted *Lycopodium clavatum*. *Microb Pathog.* 2017; Jun 20.

Abstract:

Recent evidence includes apoptosis as a defense against *Trypanosoma cruzi* infection, which promotes an immune response in the host induced by T cells, type 1, 2 and 17. Currently, there is no medicine completely preventing the progression of this disease. We investigated the immunological and apoptotic effects, morbidity and survival of mice infected with *T. cruzi* and treated with dynamized homeopathic compounds 13c: *Kalium causticum* (G_{Caus}), *Conium maculatum*, (G_{Con}), *Lycopodium clavatum* (G_{Ly}) and 7% alcohol solution (control, vehicle compounds, G_{CI}). There was significant difference in the increase of apoptosis in the treated groups, compared with G_{CI},

which might indicate action of the compounds in these cells. Infected animals treated with *Lycopodium clavatum* presented better performance compared with other groups. GLy showed a higher amount of hepatocytes and splenocytes undergoing apoptosis, higher number of apoptotic bodies in the liver, predominance of Th1 response, increased TNF- α and decreased IL-6, higher survival, lower morbidity, higher water consumption, body temperature, tendency to higher feed intake and weight gain compared with GCI. *Conium maculatum* had worse results with increased Th2 response with increased IL-4, worsening of the infection with early mortality of the animals. Together, these data suggest that highly diluted medicines modulate the immune response and apoptosis, affecting the morbidity of animals infected with a highly virulent strain of *T. cruzi*, being able to minimize the course of infection, providing more alternative approaches in the treatment of Chagas disease.

Garattini S, Mannucci PM. Homeopathy provided by a national health service: Only in Italy? *Eur J Intern Med.* 2017; 41:1-2p.

Gentry-Maharaj A, Karpinskyj C, Glazer C et al. Prevalence and predictors of complementary and alternative medicine/non-pharmacological interventions use for menopausal symptoms within the UK Collaborative Trial of Ovarian Cancer Screening. *Climacteric.* 2017; 20(3):240-47p.

Abstract:

Objectives: The negative publicity about menopausal hormone therapy (MHT) has led to increased use of complementary and alternative medicines (CAM) and non-pharmacological interventions (NPI) for menopausal symptom relief. We report on the prevalence and predictors of CAM/NPI among UK postmenopausal women.

Method: Postmenopausal women aged 50-74 years were invited to participate in the UK Collaborative Trial of Ovarian Cancer Screening (UKCTOCS). A total of 202 638 women were recruited and completed a baseline questionnaire. Of these, 136 020 were sent a postal follow-up-questionnaire between September 2006 and May 2009 which included ever-use of CAM/NPI for menopausal symptom relief. Both questionnaires included MHT use.

Results: A total of 88 430 (65.0%) women returned a completed follow-up-questionnaire; 22 206 (25.1%) reported ever-use of one or more CAM/NPI. Highest use was reported for herbal therapies (43.8%; 9725/22 206), vitamins (42.6%; 9458/22 206), lifestyle approaches (32.1%; 7137/22 206) and phytoestrogens (21.6%; 4802/22 206). Older women reported less ever-use of herbal therapies, vitamins and phytoestrogens. Lifestyle approaches, aromatherapy/reflexology/acupuncture and homeopathy were similar across age groups. Higher education, Black ethnicity, MHT or previous oral contraceptive pill use were associated with higher CAM/NPI use. Women assessed as being less hopeful about their future were less likely to use CAM/NPI.

CONCLUSION: One in four postmenopausal women reported ever-use of CAM therapies/NPI for menopausal symptom relief, with lower use reported by older women. Higher levels of education and previous MHT use were positive predictors of CAM/NPI use. UKCTOCS Trial registration: ISRCTN22488978.

Hauser W, Petzke F, Kopp I et al. Impact of conflicts of interest on guideline recommendations : Empirical study within the second update of the German interdisciplinary S3 guidelines on fibromyalgia syndrome. *Schmerz.* 2017;

31(3):308-18p.

Abstract:

Background: The impact of conflicts of interest (COI) in general and of academic COI in particular on guideline recommendations in pain medicine has not yet been studied. Whether the inclusion of patients and of representatives of all relevant healthcare professions into a guidelines group is protective against a systematic bias of decisions of a guidelines group is currently unknown.

Methods: All members of the guidelines group declared their COI before the consensus conferences by a standard form according to the rules and standards of the Association of the German Medical and Scientific Societies. The acceptance or rejection and the strength of consensus of recommendations of the second update of the interdisciplinary guidelines on fibromyalgia syndrome was analyzed twice by first including and then excluding the votes of the guideline group members with COI related to a recommendation from the results of anonymous voting via an internet platform.

Results: A total of 42 persons from different healthcare professions and patients participated in the online voting on recommendations. Of the participants 29% had no COI according to the predefined criteria, 53% met the criteria of academic and 33% the criteria of financial COI. In the case of exclusion of participants with a COI related to a specific recommendation, 2 out of 23 recommendations (homeopathy, tramadol) were not accepted. In all votes, there were more participants without COI than with COI.

Conclusion: Academic COI were more frequent than financial COI in the second update of the German interdisciplinary guidelines group on fibromyalgia syndrome. The impact of COI on guideline recommendations was low. The inclusion of patients and of all relevant healthcare professionals into a guidelines group is a protective factor against the influence of COI on guideline recommendations.

Patwardhan K, Tillu G, Jadhav PM. Good practices of publishing AYUSH research: A practical checklist for authors. *J Ayurveda Integr Med.* 2017; S0975-9476(17)30081-5.

Abstract:

Since its inception, Journal of Ayurveda and Integrative Medicine (J-AIM) has been constantly striving to create an environment that inculcates and strengthens "Good Publication Practices (GPP)" amongst students, practitioners and researchers in AYUSH community. The Journal of Ayurveda and Integrative Medicine has been doing this in the form of conducting workshops on scientific writing and research methods on different platforms. This article is based on our experiences and varied discussions that we have had with students, teachers, practitioners and researchers during these interactive sessions, and is intended at addressing the gap that prevails in the domain. The need for such awareness is felt even more strongly ever since the Beall's list of predatory journals has been unpublished. This article tries to fill the void this disappearance has created. We analyze the current scenario of AYUSH publications, enumerate the common perceptions and concerns among the workers in the field, and consider the periodicals where the doctoral and postgraduate level of Ayurveda research works are being published at present. The article also presents a practical checklist that will be helpful for students and teachers to refer authentic

resources and submit their work to an appropriate scholarly journal.

Saha BL, Seam MOR, Islam MM et al. General perception and self-practice of complementary and alternative medicine (CAM) among undergraduate pharmacy students of Bangladesh. *BMC Complement Altern Med.* 2017; 17(1):314p.

Abstract:

Background: Complementary and Alternative Medicine (CAM) is a combination of herbal medicine, traditional therapies, and mind-body intervention. This descriptive study was designed to assess the knowledge, attitudes, perception and self-use of CAM among Bangladeshi undergraduate pharmacy students. The study also evaluated their opinions about its integration into the pharmacy course curriculum.

Methods: It was a cross-sectional, questionnaire-based study conducted on 250 pharmacy students of five reputed public universities of Bangladesh.

Results: This study revealed that majority of the pharmacy students were using or had previously used at least one type of CAM. Among the students, 59% had used homeopathy followed by Ayurveda (30%), meditation (29%), massage (13%), Unani (9%), yoga (6%) and acupuncture (2%). Students' attitudes towards CAM were influenced by family and friends, books and journals, the internet and to a lesser degree by health practitioners. A significant ($p < 0.05$) number of students had knowledge about CAM. A majority of the students (90%) had positive, while 10% had negative attitudes towards CAM. Lack of knowledge and trained professionals were found to be the major interruptions to CAM use. 84.45% acknowledged the importance of knowledge about CAM for them as future healthcare practitioners. Furthermore, the majority of the students also believed that ideas and methods of CAM would be beneficial for conventional medicine.

Conclusions: From the findings of the study, it can be recommended that an approach should be taken to educate the students about the fundamentals of CAM use so that it may fulfill the professional needs of our future pharmacists.

AYURVEDA

Asadi Samani M, Bagheri N, Rafieian Kopaei M et al. Inhibition of Th1 and Th17 cells by medicinal plants and their derivatives: A systematic review. *Phytother Res.* 2017; 10.1002/ptr.5837.

Abstract:

Searching for new natural drugs that are capable of targeting Th1 and Th17 may lead to development of more effective treatments for inflammatory and autoimmune diseases. Most of the natural drugs can be derived from plants that are used in traditional medicine and folk medicine. The aim of this systematic review is to identify and introduce plants or plant derivatives that are effective on inflammatory diseases by inhibiting Th1 and Th17 responses. To achieve this purpose, the search terms herb, herbal medicine, herbal drug, medicinal plant, phytochemical, traditional Chinese medicine, Ayurvedic medicine, natural compound, inflammation, inflammatory diseases, Th1, Th17, T helper 1 or T helper 17 were used separately in Title/Keywords/Abstract in Web of Science and PubMed databases. In articles investigating the effect of the medicinal plants and their derivatives in inhibiting Th1 and Th17 cells, the effects of eight extracts of the medicinal plants, 21 plant-based compounds and some of their derivatives, and eight drugs derived from the medicinal plants' compounds in inhibiting Th1 and Th17 cells were reviewed. The results showed that medicinal plants and their derivatives are able to suppress Th17 and Th1 T cell functions as well as cytokine secretion and differentiation. The results can be used to produce herbal drugs that suppress Th, especially Th17, responses. Copyright © 2017 John Wiley & Sons, Ltd.

Bhatt L, Sebastian B, Joshi V. Mangiferin protects rat myocardial tissue against cyclophosphamide induced cardiotoxicity. *J Ayurveda Integr Med.* 2017; pii: S0975-9476(16)30275-3.

Abstract:

Background: Mangiferin is a highly potent antioxidant present in mango leaves which is utilized for therapeutic purposes.

Objective: The present study was undertaken to evaluate the cardioprotective effect of mangiferin against cyclophosphamide induced cardiotoxicity.

Materials and Methods: Rats were treated with 100 mg/kg of mangiferin in alone and interactive groups for 10 days. Apart from normal and mangiferin control groups, all the groups were subjected to cyclophosphamide (200 mg/kg, i.p.) toxicity on Day 1 and effects of different treatments were analyzed by changes in serum biomarkers, tissue antioxidant levels, electrocardiographic parameters, lipid profile and histopathological evaluation.

Results: Mangiferin treated group showed decrease in serum biomarker enzyme levels and increase in tissue antioxidant levels. Compared to cyclophosphamide control group, mangiferin treated animals showed improvement in lipid profile, electrocardiographic parameters, histological score and mortality.

Conclusion: The present findings clearly suggest the protective role of mangiferin as a powerful antioxidant preventing cardiotoxicity caused by cyclophosphamide.

Chambial S, Bhardwaj P, Mahdi AA et al. Lead poisoning due to herbal medications. *Indian J Clin Biochem.* 2017; 32(2):246-47p.

Abstract:

Lead ranks as one of the most serious environmental poisons all over the world amongst toxic heavy metals with no known biological function useful for the human body. A case of lead toxicity due to consumption of herbal medicine is being discussed. The case presented with gastrointestinal complaints and history of intake of herbal medicines for diabetes control for past 8 months. The analysis of the powdered herbal medicine procured from ayurveda practitioner was found to have high content of lead responsible for the lead toxicity. The patient is under regular followup. He has improved symptomatically on chelating therapy and blood lead levels have gradually improved. Regular awareness programs should be conducted in the population regarding possible exposure through home made herbal remedies so that general public can be made aware of the dangerous side effects of lead and other heavy metals on health.

Esposito F, Mandrone M, Vecchio CD et al. Multi-target activity of Hemidesmus indicus decoction against innovative HIV-1 drug targets and characterization of Lupeol mode of action. *Pathog Dis.* 2017; Jun 20. doi: 10.1093/femspd/ftx065.

Abstract:

Despite the availability of several anti-retrovirals there is still an urgent need for developing novel therapeutic strategies and finding new drugs against underexplored HIV-1 targets. Among them, there are the HIV-1 Reverse Transcriptase (RT)-associated Ribonuclease H (RNase H) function and the cellular α -glucosidase, involved in the control mechanisms of N-linked glycoproteins formation in the endoplasmic reticulum. It is known that many natural compounds, such as pentacyclic triterpenes, are a promising class of HIV-1 inhibitors. Hence, here we tested the pentacyclic triterpene Lupeol, showing that it inhibits the HIV-1 RT-associated RNase H function. We then performed combination studies of Lupeol and the active site RNase H inhibitor RDS1759, and blind docking calculations, demonstrating that Lupeol binds to an HIV-1 RT allosteric pocket. On the bases of these results and searching for potential multi-target active drug supplement, we also investigated the anti-HIV-1 activity of *Hemidesmus indicus*, an Ayurveda medicinal plant containing Lupeol. Results supported the potential of this plant as a valuable multi-target active drug source. In fact, by virtue of its numerous active metabolites, *Hemidesmus indicus* was able to inhibit not only the RT-associated RNase H function, but also the HIV-1 RT-associated RNA dependent DNA polymerase activity and the cellular α -glucosidase.

Guruprasad KP, Dash S, Shivakumar MB et al. Influence of Amalaki Rasayana on telomerase activity and telomere length in human blood mononuclear cells. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30055-9.

Abstract:

Background: Indian traditional medicine practices use defined rasayana preparations to improve the quality of health in aged individuals. Amalaki Rasayana is one such rasayana prepared from the fruits of *Phyllanthus emblica* and is popularly used to prevent or treat various age related health conditions. Telomerase activity in the cells maintains telomere length and is implicated in ageing and various diseases wherein the shortening of telomere during ageing is controlled chiefly by the telomerase activity.

Objective: In the present study, we investigated telomerase activity and telomere length in the peripheral blood mononuclear cells of aged individuals administered with Amalaki Rasayana.

Materials and Methods: Amalaki Rasayana was administered to healthy, aged (45-60 years) volunteers for 45 days after koshta shuddhi procedure. The telomerase activity and telomere length were analyzed on 0, 45th and 90th days of Amalaki Rasayana administration in peripheral blood mononuclear cells from these individuals and compared with age-matched placebo group and young volunteers (22-30 years). The data were compared between the groups.

Results: The results indicated an increase in telomerase activity with no discernible change in telomere length in the Amalaki administered participants. The comparison between young and aged participants revealed higher telomerase activity in young participants with no significant differences in telomere length.

CONCLUSION: The data indicate that the maintenance of telomere length is facilitated by an increase in telomerase activity upon rasayana administration in aged individuals and Amalaki Rasayana may prevent the erosion of telomeres over a period of time in aged individuals to promote healthy ageing.

Hakke CS, Balakrishnan R, Krishnamurthy MN. Yogic breathing practices improve lung functions of competitive young swimmers. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30067-5.

Abstract:

Background: Resistive breathing practices are known to improve endurance and performance in competitive swimmers. However, the effect of Pranayama or Yogic Breathing Practices (YBP) in improving respiratory endurance and performance of competitive swimmers remains un-investigated.

Objectives: To study effects of yogic breathing practices on lung functions of swimmers.

Material and Methods: Twenty seven national and international competitive swimmers of the age range 13-20 years, with 8.29 ± 2.9 years of competitive swimming experience and practicing swimming for 9.58 ± 1.81 km everyday, were assigned randomly to either an experimental (YBP) or to wait list control group (no intervention). Outcome measures were taken on day 1 and day 30 and included (1) spirometry to

measure lung function, (2) Sport Anxiety Scale-2 (SAS-2) to measure the antecedents and consequences of cognitive and somatic trait anxiety of sport performance and (3) number of strokes per breath to measure performance. The YBP group practiced a prescribed set of Yogic Breathing Practices - Sectional Breathing (Vibhagiya Pranayama), Yogic Bellows Breathing (Bhastrika Pranayama) and Alternate Nostril Breathing with Voluntary Internal Breath Holding (Nadi Shodhana with Antra Kumbhaka) for half an hour, five days a week for one month.

Results: There was a significant improvement in the YBP group as compared to control group in maximal voluntary ventilation ($p = 0.038$), forced vital capacity ($p = 0.026$) and number of strokes per breath ($p = 0.001$).

Conclusions: The findings suggest that YBP helps to enhance respiratory endurance in competitive swimmers.

Haque MA, Jantan I, Abbas Bukhari SN. Tinospora species: An overview of their modulating effects on the immune system. *J Ethnopharmacol.* 2017; 207: 67-85p.

Abstract:

Ethnopharmacological Relevance: Studies on the effects of natural immunomodulators to heal various diseases related to the immune system have been a growing interest in recent years. Amongst the medicinal plants, *Tinospora* species (family; Menispermaceae) have been one of the widely investigated plants for their modulating effects on the immune system due to their wide use in ethnomedicine to treat various ailments related to immune-related diseases. However, their ethnopharmacological uses are mainly with limited or without scientific basis.

Aim Of This Review: In this article, we have reviewed the literature on the phytochemicals of several *Tinospora* species, which have shown strong immunomodulatory effects and critically analyzed the reports to provide perspectives and instructions for future research for the plants as a potential source of new immunomodulators for use as medicinal agents or dietary supplements.

Materials and Methods: Electronic search on worldwide accepted scientific databases (Google Scholar, Science Direct, SciFinder, Web of Science, PubMed, Wiley Online Library, ACS Publications Today) was performed to compile the relevant information. Some information was obtained from books, database on medicinal plants used in Ayurveda, MSc dissertations and herbal classics books written in various languages.

Results: *T. cordifolia*, *T. crispa*, *T. sinensis*, *T. smilacina*, *T. bakis*, and *T. sagittata* have been reported to possess significant immunomodulatory effects. For a few decades, initiatives in molecular research on the effects of these species on the immune system have been carried out. However, most of the biological and pharmacological studies were carried out using the crude extracts of plants. The bioactive compounds contributing to the bioactivities have not been properly identified, and mechanistic studies to understand the immunomodulatory effects of the plants are limited by many considerations with regard to design, conduct, and interpretation.

Conclusion: The plant extracts and their active constituents should be subjected to more detail mechanistic studies, in vivo investigations in various animal models including pharmacokinetic and bioavailability studies, and elaborate toxicity study

before submission to clinical trials.

Kamath S, Sharma M, Ravishankar B et al. In-vivo study of tissue reaction of *Crotalaria pallida* and *Sansevieria roxburghiana* fibers. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30265-0.

Abstract:

Background: A suture material producing least tissue reaction is considered as ideal. Other characteristics like tensile strength, capacity to sustain sterilization process enhance its acceptability. In the present situation there is a need to reascertain the relevance and utility of these materials. Among the suture materials mentioned by Sushrutacharya, Moorva (*Sansevieria roxburghiana*) and Shana (*Crotalaria pallida*) have been studied previously for external suturing in operated cases of inguinal hernia, which showed insignificant tissue reaction. An experimental study to confirm the extent of tissue reaction in deeper planes is needed before extending the use of materials in the deep tissues.

Objective: The objective of the study was to analyze tissue reaction and tensile strengths of plant fibres extracted from *Crotalaria pallida* and *Sansevieria roxburghiana*.

Materials and Methods: The study was conducted on 18 albino rats, 3 groups of 6 rats each for a period of 21 days inserting the suture materials in deeper tissue, studying histopathology changes of the deeper connective tissues, hydroxyproline content and blood parameters on 7th, 14th, 21st days of the study. The tensile strength of the two materials was also assessed on 7th day in three different conditions. Statistical analysis was carried out using paired and unpaired t tests.

Results: *S. roxburghiana* had least tissue reaction. *C. pallida* showed greater tensile strength in comparison to Moorva.

Conclusion: *C. pallida* can be used for deep tissue approximation because of its moderate tissue reaction and tensile strength, successive increase in hydroxyproline content and its capacity to sustain sterilization.

Kuriakose J, Lal Raisa H, AV, Eldhose B. Terminalia bellirica (Gaertn.) Roxb. fruit mitigates CCl₄ induced oxidative stress and hepatotoxicity in rats. *Biomed Pharmacother.* 2017; 93:327-33p.

Abstract:

Terminalia bellirica (Gaertn.) Roxb. is a medicinal plant used for the treatment of various ailments in the traditional system of medicine like Ayurveda where it has been prescribed as a rejuvenator and general health tonic. The fruit of the plant is one of the components of the age old ayurvedic formulation-'Triphala'. The present study evaluates curative effect of aqueous acetone extract of *Terminalia bellirica* fruits (AATB) against CCl₄ induced oxidative stress and liver damage in an animal model. Two doses of the fruit extract (200mg/kg body weight and 400mg/kg body weight) were investigated for the beneficial effects. At the end of the treatment, liver function markers (ALT, AST, ALP, GGT, LDH, total bilirubin, total protein, albumin, globulin, albumin-globulin ratio) as well as hepatic oxidative stress markers (SOD, CAT, GSH) were evaluated. Treatment with AATB significantly restored the parameters towards

normal level as compared to the elevated biochemical markers in the CCl₄ treated animals. Reversal to normal tissue architecture was observed in histological evaluation. The results of AATB (400mg/kg) were found comparable with that of standard drug silymarin in all the parameters. The above findings suggest the therapeutic potential of the plant in alleviating hepatic oxidative stress and tissue damage, hence the traditional use of the plant in this regard stands justified.

Mishra V, Rajavashisth T. Shotha and the unified theory of inflammatory diseases 2017. *J Ayurveda Integr Med.* 2017; Jun 22. pii: S0975-9476(17)30184-5.

Mohanty SK, Swamy MK, Sinniah UR et al. *Leptadenia reticulata* (Retz.) Wight & Arn. (jivanti): botanical, agronomical, phytochemical, pharmacological, and biotechnological aspects. *Molecules.* 2017; 22(6).

Abstract:

Leptadenia reticulata (Retz.) Wight & Arn. (Apocynaceae), is a traditional medicinal plant species widely used to treat various ailments such as tuberculosis, hematopoiesis, emaciation, cough, dyspnea, fever, burning sensation, night blindness, cancer, and dysentery. In Ayurveda, it is known for its revitalizing, rejuvenating, and lactogenic properties. This plant is one of the major ingredients in many commercial herbal formulations, including Speman, Envirocare, Calshakti, Antisept, and Chyawanprash. The therapeutic potential of this herb is because of the presence of diverse bioactive compounds such as α -amyrin, β -amyrin, ferulic acid, luteolin, diosmetin, rutin, β -sitosterol, stigmasterol, hentricontanol, a triterpene alcohol simiarenol, apigenin, reticulatin, deniculatin, and leptaculatin. However, most biological studies on *L. reticulata* are restricted to crude extracts, and many biologically active compounds are yet to be identified in order to base the traditional uses of *L. reticulata* on evidence-based data. At present, *L. reticulata* is a threatened endangered plant because of overexploitation, unscientific harvesting, and habitat loss. The increased demand from pharmaceutical, nutraceutical, and veterinary industries has prompted its large-scale propagation. However, its commercial cultivation is hampered because of the non-availability of genuine planting material and the lack of knowledge about its agronomical practices. In this regard, micropropagation techniques will be useful to obtain true-to-type *L. reticulata* planting materials from an elite germplasm to meet the current demand. Adopting other biotechnological approaches such as synthetic seed technology, cryopreservation, cell culture, and genetic transformation can help conservation as well as increased metabolite production from *L. reticulata*. The present review summarizes scientific information on the botanical, agronomical, phytochemical, pharmacological, and biotechnological aspects of *L. reticulata*. This comprehensive information will certainly allow better utilization of this industrially important herb towards the discovery of lead drug molecules.

More P, Pai K. Involvement of tyrosine-specific protein kinase and protein kinase C in J774A.1 macrophage functions activated by *Tinospora cordifolia* in vitro. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30418-1.

Abstract:

Background: Macrophages are the first line of defense and constitute important participant in the bi-directional interaction between innate and specific immunity. Macrophages are in a quiescent form and get activated when given a stimulus. In our

previous studies we have reported that guduchi or LPS treatment of macrophages enhanced production of nitric oxide (NO) and increased tumoricidal activity against L929 fibroblast cells.

Objective: In the present study effect of *Tinospora cordifolia* commonly known as guduchi on macrophage activation and the mechanism of action i.e. involvement of protein kinase C inhibitor and tyrosine-specific protein kinase inhibitor was investigated.

Materials and Methods: The present study was undertaken to determine whether H-7 (inhibitor of protein kinase C) and/or genistein (inhibitor of tyrosine-specific protein kinase) could inhibit guduchi or LPS-induced macrophage NO and TNF- α production or reduce the cytolysis of L929 fibroblast cells.

Results: It was observed that in vitro incubation with H-7 and/or genistein completely inhibited guduchi or LPS-induced NO and TNF- α production by macrophages (J774A.1).

Conclusion: The inhibitory effects of H-7 and/or genistein, suggest that phosphorylation via these kinases may upregulate the NO synthase activity in macrophages.

Mukhi P, Mohapatra SS, Bhattacharjee M et al. Mercury based drug in ancient India: The red sulfide of mercury (rasasindur) in nanoscale. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30363-1.

Abstract:

Mercury is one of the elements which had attracted the attention of the chemists and physicians of ancient India and China. Among the various metal based drugs which utilize mercury, we became interested in the red sulfide of mercury which is known in ancient Indian literature as rasasindur (alias rasasindura, rasasindoor, rasasinduram, sindur, or sindoor) and is used extensively in various ailments and diseases. Following various physico-chemical characterizations it is concluded that rasasindur is chemically pure α -HgS with Hg:S ratio as 1:1. Analysis of rasasindur vide Transmission Electron Microscopy (TEM) showed that the particles are in nanoscale. Bio-chemical studies of rasasindur were also demonstrated. It interacts with Bovine Serum Albumin (BSA) with an association constant of $(9.76 \pm 0.56) \times 10^3 \text{ M}^{-1}$ and behaves as a protease inhibitor by inhibiting the proteolysis of BSA by trypsin. It also showed mild antioxidant properties.

Nagulapalli Venkata KC, Swaroop A, Bagchi D et al. Small plant with big benefits: Fenugreek (*Trigonella foenum-graecum* Linn.) for disease prevention and health promotion. *Mol Nutr Food Res.* 2017; 61(6). doi: 10.1002/mnfr.201600950.

Abstract:

Plant-derived natural products have long-standing utility toward treating degenerative diseases. It is estimated that about two-thirds of world population depend on traditional medicine for primary medical needs. Fenugreek (*Trigonella foenum-graecum* Linn.), a short-living annual medicinal plant belonging to Fabaceae family, is used extensively in various parts of the world as herb, food, spice, and

traditional medicine. Fenugreek is considered as one of the oldest medicinal plants and its health-promoting effects have been cited in Ayurveda and traditional Chinese medicine. The investigations into the chemical composition and pharmacological actions have seen a renaissance in recent years. Extensive preclinical and clinical research have outlined the pharmaceutical uses of fenugreek as antidiabetic, antihyperlipidemic, antiobesity, anticancer, anti-inflammatory, antioxidant, antifungal, antibacterial, galactogogue and for miscellaneous pharmacological effects, including improving women's health. The pharmacological actions of fenugreek are attributed to diverse array of phytoconstituents. The phytochemical analysis reveals the presence of steroids, alkaloids, saponins, polyphenols, flavonoids, lipids, carbohydrates, amino acids, and hydrocarbons. This review aims to summarize and critically analyze the current available literature to understand the potential of fenugreek for disease prevention and health improvement with special emphasis on cellular and molecular mechanisms. Current challenges and new directions of research on fenugreek are also discussed.

Nema A, Gupta SK, Dudhamal TS et al. Transrectal ultra sonography based evidence of ksharasutra therapy for bhagandara (fistula-in-ano): A case series. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30159-0.

Abstract:

Ksharasutra (parasurgical procedure using a thread treated by alkalies) is being practiced in Indian system of medicine since ancient time for management of ano-rectal disorders; particularly for Bhagandara, (fistula in ano), and generally difficult to treat. In this case series, standard Ksharasutra was prepared as per the Ayurvedic Pharmacopeia of India and used to treat the different cases of Bhagandara. In this case series total 6 patients of Bhagandara were treated with Ksharasutra and partial fistulectomy. The average Unit Cutting Time and healing (UCTH) was observed 7.86 days/cm. During treatment Panchawalkala Kwatha (decoction of five medicinal plant's bark), Shatdhautaghrita, Jatyaditaila and Erandabhrishtaharitaki Churna (powder) were used as adjuvant drugs. To generate quality evidence Transrectal Ultra Sonography (TRUS) was used in pre as well as post-treatment and showed remarkable tool to assess effect of treatment. Substantial clinical result was observed at the end of treatment and all the patients were free of fistula. No recurrence was observed in any case during the 12 follow up of 12 months. The treatment was reported safe and well tolerated in all the patients.

Patwardhan K, Patwardhan B. Ayurveda education reforms in India. *J Ayurveda Integr Med.* 2017; S0975-9476(17)30294-2.

Patwardhan K, Tillu G, Jadhav PM. Good practices of publishing AYUSH research: A practical checklist for authors. *J Ayurveda Integr Med.* 2017; S0975-9476(17)30081-5.

Abstract:

Since its inception, Journal of Ayurveda and Integrative Medicine (J-AIM) has been constantly striving to create an environment that inculcates and strengthens "Good Publication Practices (GPP)" amongst students, practitioners and researchers in AYUSH community. The Journal of Ayurveda and Integrative Medicine has been doing this in the form of conducting workshops on scientific writing and research methods on different platforms. This article is based on our experiences and varied discussions

that we have had with students, teachers, practitioners and researchers during these interactive sessions, and is intended at addressing the gap that prevails in the domain. The need for such awareness is felt even more strongly ever since the Beall's list of predatory journals has been unpublished. This article tries to fill the void this disappearance has created. We analyze the current scenario of AYUSH publications, enumerate the common perceptions and concerns among the workers in the field, and consider the periodicals where the doctoral and postgraduate level of Ayurveda research works are being published at present. The article also presents a practical checklist that will be helpful for students and teachers to refer authentic resources and submit their work to an appropriate scholarly journal.

Rai SN, Birla H, Zahra W et al. Immunomodulation of Parkinson's disease using *Mucuna pruriens* (Mp). *J Chem Neuroanat.* 2017; Jun 19. pii: S0891-0618(17)30049-2.

Abstract:

Immune control is associated with nigrostriatal neuroprotection for Parkinson's disease (PD); though its direct cause and effect relationships have not yet been realized and modulating the immune system for therapeutic gain has been openly discussed. While the pathobiology of PD remains in study, neuroinflammation is thought to speed nigrostriatal degeneration. The neuroinflammatory cascade associated with PD begins with aggregation of misfolded or post-translationally modified α -synuclein (α -syn). Such aggregation results in neuronal cell death and the presence of chronically activated glia (microglia and astroglia), leading to the production of proinflammatory cytokines like tumor necrosis factor alpha (TNF- α), interleukin-1 beta (IL-1 β), IL-6, and enzymes such as nicotinamide adenine dinucleotide phosphate (NADPH) oxidase and cyclooxygenase-2 (COX-2). These changes in the glial phenotype can affect the central nervous system (CNS) microenvironment by producing a pro-inflammatory milieu that speeds PD pathogenesis. *Mucuna pruriens* (Mp) is the most popular drug in Ayurveda, the Indian system of medicine. Several reports have suggested that it possesses analgesic, anti-inflammatory, anti-neoplastic, anti-epileptic and anti-microbial activities. Mp contain L-DOPA and ursolic acid which has an anti-inflammatory property. There are very few literatures which show the immunomodulatory activity of Mp in PD, several researchers have tried to work on the immunomodulatory activity of Mp in some other diseases. The results of several studies show that Mp modulate the immune components like TNF- α , IL-6, IFN- λ , IL-1 β , iNOS and IL-2 in the CNS. It also modulates the activity of the transcription factor NF- κ B which plays an important role in the progression of the PD. Thus, by altering these cytokines or transcription factors, Mp protects or prevents the progression of PD. Thus in this review we try to explore the immunomodulatory activity of Mp in PD.

Saha BL, Seam MOR, Islam MM et al. General perception and self-practice of complementary and alternative medicine (CAM) among undergraduate pharmacy students of Bangladesh . *BMC Complement Altern Med.* 2017;17(1):314p.

Abstract:

Background: Complementary and Alternative Medicine (CAM) is a combination of herbal medicine, traditional therapies, and mind-body intervention. This descriptive study was designed to assess the knowledge, attitudes, perception and self-use of CAM among Bangladeshi undergraduate pharmacy students. The study also evaluated their opinions about its integration into the pharmacy course curriculum.

Methods: It was a cross-sectional, questionnaire-based study conducted on 250 pharmacy students of five reputed public universities of Bangladesh.

Results: This study revealed that majority of the pharmacy students were using or had previously used at least one type of CAM. Among the students, 59% had used homeopathy followed by Ayurveda (30%), meditation (29%), massage (13%), Unani (9%), yoga (6%) and acupuncture (2%). Students' attitudes towards CAM were influenced by family and friends, books and journals, the internet and to a lesser degree by health practitioners. A significant ($p < 0.05$) number of students had knowledge about CAM. A majority of the students (90%) had positive, while 10% had negative attitudes towards CAM. Lack of knowledge and trained professionals were found to be the major interruptions to CAM use. 84.45% acknowledged the importance of knowledge about CAM for them as future healthcare practitioners. Furthermore, the majority of the students also believed that ideas and methods of CAM would be beneficial for conventional medicine.

Conclusions: From the findings of the study, it can be recommended that an approach should be taken to educate the students about the fundamentals of CAM use so that it may fulfill the professional needs of our future pharmacists.

Sarkar PK, Prajapati PK, Shukla VJ et al. Evaluation of processed borax as antidote for aconite poisoning. *J Ethnopharmacol.* 2017; 205:138-146p.

Abstract:

Ethnopharmacological Relevance: Aconite root is very poisonous; causes cardiac arrhythmias, ventricular fibrillation and ventricular tachycardia. There is no specific antidote for aconite poisoning. In Ayurveda, dehydrated borax is mentioned for management of aconite poisoning.

Aim of the Study: The investigation evaluated antidotal effect of processed borax against acute and sub-acute toxicity, cardiac toxicity and neuro-muscular toxicity caused by raw aconite.

Materials and Methods: For acute protection Study, single dose of toxicant (35mg/kg) and test drug (22.5mg/kg and 112.5mg/kg) was administered orally, and then 24h survival of animals was observed. The schedule was continued for 30 days in sub-acute protection Study with daily doses of toxicant (6.25mg/kg), test drug (22.5mg/kg and 112.5mg/kg) and vehicle. Hematological and biochemical tests of blood and serum, histopathology of vital organs were carried out. The cardiac activity Study was continued for 30 days with daily doses of toxicant (6.25mg/kg), test drug (22.5mg/kg), processed borax solution (22.5mg/kg) and vehicle; ECG was taken after 1h of drug

administration on 1TB, 15th and on 30th day. For neuro-muscular activity Study, the leech dorsal muscle response to 2.5µg of acetylcholine followed by response of toxicant at 25µg and 50µg doses and then response of test drug at 25µg dose were recorded.

Results: Protection index indicates that treated borax gave protection to 50% rats exposed to the lethal dose of toxicant in acute protection Study. Most of the changes in hematological, biochemical parameters and histopathological Study induced by the toxicant in sub-acute protection Study were reversed significantly by the test drug treatment. The ventricular premature beat and ventricular tachyarrhythmia caused by the toxicant were reversed by the test drug indicate reversal of toxicant induced cardio-toxicity. The acetylcholine induced contractions in leech muscle were inhibited by toxicant and it was reversed by test drug treatment.

Conclusion: The processed borax solution is found as an effective protective agent to acute and sub-acute aconite poisoning, and aconite induced cardiac and neuro-muscular toxicity. Processed borax at therapeutic dose (22.5mg/kg) has shown better antidotal activity profile than five times more than therapeutic dose (112.5mg/kg).

Talekar YP, Apte KG, Paygude SV et al. Studies on wound healing potential of polyherbal formulation using in vitro and in vivo assays. *J Ayurveda Integr Med.* 2017; S0975-9476(16)30099-7.

Abstract:

Background: The use of herbal plant extracts in wound healing is known through decades, but it is necessary to provide scientific data through reverse pharmacology.

Objective: The aim of the present study is to find the mechanism behind the healing of wounds using in vitro and in vivo assays.

Methods and Material: The study was designed to determine proliferation and mobilization of fibroblast and keratinocytes at the site of injury, angiogenesis at the site of healing and reduction in oxidative stress while healing. In our earlier studies it was observed that herbal extract of *Vitex negundo* L. (VN), *Emblica officinalis* Gaertn (EO), and *Tridax procumbens* L. (TP) showed rapid regeneration of skin, wound contraction and collagen synthesis at the site of injury in excision wound model. In the present study the cell mobilization was monitored in the scratch assay on L929 fibroblastic cell line and HaCaT keratinocytes cell line under the influence of aqueous plant extracts and its formulation. This formulation was also assessed for its angiogenic potential using CAM assay. Study was carried out to probe synergistic effect of polyherbal formulation using excision model in rat.

Results: The formulation was found to contain high amount of flavonoids, tannins and phenols which facilitate wound healing. At 20 µg/ml concentration of formulation, significant increase in tertiary and quaternary vessels were observed due to angiogenic potential of formulation. Formulation at the concentration of 3 µg/ml and 5 µg/ml showed significant mobilization of keratinocytes and fibroblasts respectively at the site of injury. Polyherbal formulation showed rapid regeneration of skin and wound contraction. Biochemical parameters like hydroxyproline, hexosamine and collagen turnover was increased in test drug treated animals as compared to untreated, whereas antioxidants such as catalase and GSH were increased significantly and decreased amount of tissue MDA was observed.

Conclusion: Polyherbal formulation prepared from the plant extracts accelerates

wound healing process by proliferation and mobilization of fibroblast and keratinocytes, and angiogenesis at the site of injury. It also shows fast contraction of wound with its beneficial improvement in tissue biochemical and antioxidant parameters.

Verma A, Singh D, Anwar F et al. Triterpenoids principle of *Wedelia calendulacea* attenuated diethylnitrosamine-induced hepatocellular carcinoma via down-regulating oxidative stress, inflammation and pathology via NF- κ B pathway. *Inflammopharmacology*. 2017; doi: 10.1007/s10787-017-0350-3.

Abstract:

The aerial part of *Wedelia calendulacea* have been used in Ayurveda, Unani, Tibetan, Siddha and other folk medicine systems to protect the liver and renal tissue. Liver is considered as primary metabolizing site of body, which is prone to damage by endogenous and exogenous toxicants. A reason for liver toxicity, and major causes of the hepatocellular carcinoma (HCC). 19- α -Hydroxyurs-12(13)-ene-28 oic acid-3-O- β -D-glucopyranoside (HEG), a triterpenoids found in the higher plants, has been known to possess protective effect against various toxicants. The aim of the current study was to scrutinize the hepatoprotective mechanism of HEG against DEN-induced oxidative stress, hyperproliferation, inflammation and apoptosis tissue injury in Wistar rats. Invitro cell lines study of HEG scrutinized against the Hep-G2 and HuH-7 cells. A single dose of DEN (200 mg/kg) and double dose of phenobarbitol were administered to induce the liver damage in rats; the dose treatment of HEG was terminated at the end of 22 weeks. Macroscopical study was performed for the confirmation of hepatic nodules. The serum and hepatic samples were collected for further biochemical and histopathological analysis. Hepatic; non-hepatic; Phase I and II antioxidant enzymes were also examined. Additionally, we also scrutinized the inflammatory cytokines viz., tumor necrosis factor- α , interlukin-6, interlukin-1 β , and Nuclear factor kappa beta (NF- κ B), respectively. Histopathological study was also performed for analyzing the changes during the HCC. HEG confirmed the reduction of growth and deoxyribonucleic acid synthesis of both cell lines. DEN successfully induced the HCC in all group, which was significantly ($p < 0.001$) altered by the HEG in a dose-dependent manner. The decreased level of pro-inflammatory cytokines and altered membrane-bound enzyme activity were also observed. HEG inhibits the phase I, II and antioxidant enzymes at the effective dose-dependent manner, which were considered as the precursor of the HCC. The alteration of phase I, II and antioxidant enzymes confirmed the inhibition of inflammatory reaction and oxidative stress, which directly or indirectly inhibited the NF- κ B expression. Collectively, we can conclude that the HEG inhibited the growth of Hepatocellular carcinoma via attenuating the NF- κ B pathway.

UNANI MEDICINE

Barkat MA, Abul H, Ahmad J et al. Insights into the targeting potential of thymoquinone for therapeutic intervention against triple-negative breast cancer. *Curr Drug Targets*. 2017; doi: 10.2174/1389450118666170612095959.

Abstract:

Background: Thymoquinone (TQ) is a bioactive phytoconstituent obtained from *Nigella sativa* (black seeds). It has promising potential in cancer prevention.

Objective: Previous studies have shown that TQ can modulate signaling pathways responsible for cancer progression, thus enhances the efficacy and improve safety profile of clinically used anticancer drugs.

Method: TQ acts on cell cycle and inhibits progression from G1 to S phase by targeting various proteins (cyclin D1, cyclin E, and p27). It also exhibits histone deacetylase (HDAC) inhibitory effects, targets p21 and Maspin, and induces pro-apoptotic gene, Bax and downregulates anti-apoptotic gene Bcl-2. Breast cancer (BC) is reported as one of the most common malignancies in women.

Results: Despite the research and advancement, it remains one of the most common causes of cancer related deaths among women. Recent advancements in molecular screening of BC led to identification of clinically challenging condition of triple negative breast cancer (TNBC). TNBC is characterized by absence of targetable receptors viz. estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) expressions. It is also characterized by reduced or absence of phosphatase and tensin homolog (PTEN) expression, a tumor suppressor gene having diverse functions including regulation of apoptosis, cell cycle, and metastasis.

Conclusion: Since TQ has been reported to up-regulate several growth factors such as vascular endothelial growth factor (VEGF), EGF and PTEN expression, the present review article discusses the targeting potential of TQ for therapeutic intervention against such types of breast cancer.

Jain A, Venkatesh P, Bulbake U et al. Liposphere mediated topical delivery of Thymoquinone in the treatment of psoriasis. *Nanomedicine*. 2017; Jun 21. pii: S1549-9634(17)30116-8.

Abstract:

Thymoquinone (TMQ) is reported with good anti-psoriatic activity however, the hydrophobicity, poor aqueous solubility, light and pH sensitive nature of TMQ hinder its delivery to target site. To address these delivery challenges of TMQ, lipospheres were explored. The topical use of lipospheres offer an effective mean of penetration along with stability and scalability. TMQ lipospheres of particle size below 70nm were prepared and evaluated. These lipospheres resulted in deeper skin penetration, slow release and skin compatibility. Anti-inflammatory and anti-psoriatic potential of lipospheres was determined using in vitro cell lines and imiquimod induced psoriatic plaque model. Cell lines studies indicated reduction in the level of nitric oxide and IL-2, IL-6, IL-1 β , TNF- α , whereas in vivo results indicated improvement in the phenotypic, histopathological features and reduced level of IL-17 and TNF- α in psoriatic skin. These results suggest the potential of TMQ lipospheres in the

management of psoriasis.

Patwardhan K, Tillu G, Jadhav PM. Good practices of publishing AYUSH research: A practical checklist for authors. *J Ayurveda Integr Med.* 2017; S0975-9476(17)30081-5.

Abstract:

Since its inception, Journal of Ayurveda and Integrative Medicine (J-AIM) has been constantly striving to create an environment that inculcates and strengthens "Good Publication Practices (GPP)" amongst students, practitioners and researchers in AYUSH community. The Journal of Ayurveda and Integrative Medicine has been doing this in the form of conducting workshops on scientific writing and research methods on different platforms. This article is based on our experiences and varied discussions that we have had with students, teachers, practitioners and researchers during these interactive sessions, and is intended at addressing the gap that prevails in the domain. The need for such awareness is felt even more strongly ever since the Beall's list of predatory journals has been unpublished. This article tries to fill the void this disappearance has created. We analyze the current scenario of AYUSH publications, enumerate the common perceptions and concerns among the workers in the field, and consider the periodicals where the doctoral and postgraduate level of Ayurveda research works are being published at present. The article also presents a practical checklist that will be helpful for students and teachers to refer authentic resources and submit their work to an appropriate scholarly journal.

Saha BL, Seam MOR, Islam MM et al. General perception and self-practice of complementary and alternative medicine (CAM) among undergraduate pharmacy students of Bangladesh. *BMC Complement Altern Med.* 2017; 17(1):314p.

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YOGA

Aveni E, Berna C, Rodondi PY Complementary medicine for low back pain: What is the scientific evidence? *Rev Med Suisse.* 2017;13(568):1300-1303p.

Abstract:

Complementary medicines are frequently used by chronic pain patients. It is a challenge for the primary care physician to provide objective information based on the scientific literature. Meta-analyses have shown favourable effects of acupuncture, therapeutic massage and osteopathy for patients with acute low back pain. Concerning chronic low back pain, meta-analyses have shown positive results with acupuncture, osteopathy, yoga and tai-chi. Other therapies have shown positive effects, but further trials are necessary to fully validate them. This article reviews the literature supporting the most studied complementary medicines.

Brown ML, Rojas E, Gouda S. Mind-body approach to pediatric pain management. *Children (Basel).* 2017; Jun 20; 4(6).

Abstract:

Pain is a significant public health problem that affects all populations and has significant financial, physical and psychological impact. Opioid medications, once the mainstay of pain therapy across the spectrum, can be associated with significant morbidity and mortality. Centers for Disease and Control (CDC) guidelines recommend that non-opioid pain medications are preferred for chronic pain outside of certain indications (cancer, palliative and end of life care). Mindfulness, hypnosis, acupuncture and yoga are four examples of mind-body techniques that are often used in the adult population for pain and symptom management. In addition to providing significant pain relief, several studies have reported reduced use of opioid medications when mind-body therapies are implemented. Mind-body medicine is another approach that can be used in children with both acute and chronic pain to improve pain management and quality of life.

Campos MH, Giraldi NM, Gentil P et al. Geometric curvature of the spine during the sirshasana, the yoga's headstand. *J Sports Sci.* 2017; 35(12):1134-41p.

Abstract:

This study analysed the behaviour of the geometric curvature of the spine during sirshasana. The position of dorsal retroreflective markers was computed via stereophotogrammetric analysis in six males and five females (29.4 ± 8.8 years, 63.0 ± 11.4 kg, 1.66 ± 0.08 m [average \pm standard deviation]). The spinal points were projected onto the sagittal and frontal planes of the trunk, a polynomial was fitted to the data and the two-dimensional geometric curvature was quantified. The inferior lumbar lordosis decreased compared to the orthostatic position and gait, which may favour the posterior protrusion of the lumbar spinal nucleus pulposus in people with posterior herniation. The lateral deviation at the middle of the thoracic spine increases during sirshasana, which may reflect increased difficulties for postural control and spinal loads. It could be useful for promoting positive spinal structural and functional chronic

adaptations for healthy participants, if the yoga programme is carefully planned and the spinal alignment is carefully monitored during a headstand. However, it may aggravate some spinal diseases, especially scoliosis.

Chang DG, Kertesz SG. Yoga and low back pain: No fool's tool. *Ann Intern Med.* 2017; Jun 20. doi: 10.7326/M17-1263

Cramer H, Schafer M, Schols M et al. Randomised clinical trial: Yoga vs written self-care advice for ulcerative colitis. *Aliment Pharmacol Ther.* 2017; 45(11):1379-1389p.

Abstract:

Background: Perceived stress seems to be a risk factor for exacerbation of ulcerative colitis. Yoga has been shown to reduce perceived stress.

Aims: To assess the efficacy and safety of yoga for improving quality of life in patients with ulcerative colitis.

Methods: A total of 77 patients (75% women; 45.5 ± 11.9 years) with ulcerative colitis in clinical remission but impaired quality of life were randomly assigned to yoga (12 supervised weekly sessions of 90 min; n = 39) or written self-care advice (n = 38). Primary outcome was disease-specific quality of life (Inflammatory Bowel Disease Questionnaire). Secondary outcomes included disease activity (Rachmilewitz clinical activity index) and safety. Outcomes were assessed at weeks 12 and 24 by blinded outcome assessors.

Results: The yoga group had significantly higher disease-specific quality of life compared to the self-care group after 12 weeks ($\Delta = 14.6$; 95% confidence interval=2.6-26.7; $P = 0.018$) and after 24 weeks ($\Delta = 16.4$; 95% confidence interval=2.5-30.3; $P = 0.022$). Twenty-one and 12 patients in the yoga group and in the self-care group, respectively, reached a clinical relevant increase in quality of life at week 12 ($P = 0.048$); and 27 and 17 patients at week 24 ($P = 0.030$). Disease activity was lower in the yoga group compared to the self-care group after 24 weeks ($\Delta = -1.2$; 95% confidence interval=-0.1-[-2.3]; $P = 0.029$). Three and one patient in the yoga group and in the self-care group, respectively, experienced serious adverse events ($P = 0.317$); and seven and eight patients experienced nonserious adverse events ($P = 0.731$).

Conclusions: Yoga can be considered as a safe and effective ancillary intervention for patients with ulcerative colitis and impaired quality of life.

Gross CR, Reilly Spong M, Park T et al. Telephone-adapted mindfulness-based stress reduction (tmsr) for patients awaiting kidney transplantation. *Contemp Clin Trials* 2017; 57:37-43p.

Abstract:

Background: Patients with progressive kidney disease experience increasing physiologic and psychosocial stressors and declining health-related quality of life (HRQOL).

Methods: We conducted a randomized, active-controlled, open-label trial to test whether a Mindfulness-based Stress Reduction (MBSR) program delivered in a novel workshop-

teleconference format would reduce symptoms and improve HRQOL in patients awaiting kidney transplantation. Sixty-three transplant candidates were randomized to one of two arms: i) telephone-adapted MBSR (tMBSR, an 8-week program of meditation and yoga); or ii) a telephone-based support group (tSupport). Participants completed self-report questionnaires at baseline, post-intervention, and after 6-months. Anxiety, measured by the State-Trait Anxiety Inventory (STAI) post-intervention served as the primary outcome. Secondary outcomes included: depression, sleep quality, pain, fatigue, and HRQOL assessed by SF-12 Physical and Mental Component Summaries (PCS, MCS).

Results: 55 patients (age 54±12yrs) attended their assigned program (tMBSR, n=27; tSupport, n=28). 49% of patients had elevated anxiety at baseline. Changes in anxiety were small and did not differ by treatment group post-intervention or at follow-up. However, tMBSR significantly improved mental HRQOL at follow-up: +6.2 points on the MCS - twice the minimum clinically important difference (95% CI: 1.66 to 10.8, P=0.01). A large percentage of tMBSR participants (≥90%) practiced mindfulness and reported it helpful for stress management.

Conclusions: Neither mindfulness training nor a support group resulted in clinically meaningful reductions in anxiety. In contrast, finding that tMBSR was more effective than tSupport for bolstering mental HRQOL during the wait for a kidney transplant is encouraging and warrants further investigation. ClinicalTrials.govNCT01254214.

Hagglund E, Hagerman I, Dencker K et al. Effects of yoga versus hydrotherapy training on health-related quality of life and exercise capacity in patients with heart failure: A randomized controlled study. *Eur J Cardiovasc Nurs.* 2017; 16(5):381-89p.

Abstract:

Aims: The aims of this study were to determine whether yoga and hydrotherapy training had an equal effect on the health-related quality of life in patients with heart failure and to compare the effects on exercise capacity, clinical outcomes, and symptoms of anxiety and depression between and within the two groups.

Methods: The design was a randomized controlled non-inferiority study. A total of 40 patients, 30% women (mean±SD age 64.9±8.9 years) with heart failure were randomized to an intervention of 12 weeks, either performing yoga or training with hydrotherapy for 45-60 minutes twice a week. Evaluation at baseline and after 12 weeks included self-reported health-related quality of life, a six-minute walk test, a sit-to-stand test, clinical variables, and symptoms of anxiety and depression.

Results: Yoga and hydrotherapy had an equal impact on quality of life, exercise capacity, clinical outcomes, and symptoms of anxiety and depression. Within both groups, exercise capacity significantly improved (hydrotherapy p=0.02; yoga p=0.008) and symptoms of anxiety decreased (hydrotherapy p=0.03; yoga p=0.01). Patients in the yoga group significantly improved their health as rated by EQ-VAS (p=0.004) and disease-specific quality of life in the domains symptom frequency (p=0.03), self-efficacy (p=0.01), clinical summary as a combined measure of symptoms and social factors (p=0.05), and overall summary score (p=0.04). Symptoms of depression were decreased in this group (p=0.005). In the hydrotherapy group, lower limb muscle strength improved significantly (

p=0.01).

Conclusions: Yoga may be an alternative or complementary option to established forms of exercise training such as hydrotherapy for improvement in health-related quality of life and may decrease depressive symptoms in patients with heart failure.

Hillinger MG, Wolever RQ, McKernan LC et al. Integrative medicine for the treatment of persistent pain. *Prim Care.* 2017; 44(2):247-64p.

Abstract:

Integrative health modalities can provide useful tools in the management of persistent pain in the primary care setting. These modalities, such as acupuncture, mind-body medicine, diet and herbs, and movement strategies can be safely used and may provide patients with hope and empowerment. It is highly recommended that the patient work alongside trained professionals for a given modality and/or an interprofessional team.

Huberty J, Eckert R, Gowin K et al. Feasibility study of online-streamed yoga for symptom management in patients with myeloproliferative neoplasms. *Haematologica.* 2017; pii: haematol.2017.168583. doi: 10.3324/haematol.2017.168583.

Kotwas I, McGonigal A, Bastien Toniazzo M et al. Stress regulation in drug-resistant epilepsy. *Epilepsy Behav.* 2017; 71(Pt A):39-50p.

Abstract:

The prevalence of psychological distress, especially depressive and anxiety disorders, is higher in epilepsy than in other chronic health conditions. These comorbid conditions contribute even more than epileptic seizures themselves to impaired quality of life in patients with epilepsy (PWE). The link between these comorbidities and epilepsy appears to have a neurobiological basis, which is at least partly mediated by stress through psychological and pathophysiological pathways. The impact of stress in PWE is also particularly important because it is the most frequently reported seizure trigger. It is therefore crucial for clinicians to take stress-related conditions and psychiatric comorbidities into account when managing PWE and to propose clinical support to enhance self-control of stress. Screening tools have been specially designed and validated in PWE for depressive disorders and anxiety disorders (e.g. NDDI-E, GAD-7). Other instruments are useful for measuring stress-related variables (e.g. SRRS, PSS, SCS, MHLCS, DSR-15, ERP-R, QOLIE-31) in order to help characterize the individual "stress profile" and thus orientate patients towards the most appropriate treatment. Management includes both pharmacological treatment and nonpharmacological methods for enhancing self-management of stress (e.g. mindfulness-based therapies, yoga, cognitive-behavioral therapies, biofeedback), which may not only protect against psychiatric comorbidities but also reduce seizure frequency.

Langhorst J, Heldmann P, Henningsen P et al. Complementary and alternative procedures for fibromyalgia syndrome: Updated guidelines 2017 and overview of systematic review articles. *Schmerz.* 2017; 31(3):289-95p.

Abstract:

Background: The regular update of the guidelines on fibromyalgia syndrome, AWMF number 145/004, was scheduled for April 2017.

Methods: The guidelines were developed by 13 scientific societies and 2 patient self-help organizations coordinated by the German Pain Society. Working groups (n =8) with a total of 42 members were formed balanced with respect to gender, medical expertise, position in the medical or scientific hierarchy and potential conflicts of interest. A search of the literature for systematic reviews of randomized controlled trials of complementary and alternative therapies from December 2010 to May 2016 was performed in the Cochrane library, MEDLINE, PsycINFO and Scopus databases. Levels of evidence were assigned according to the classification system of the Oxford Centre for Evidence-Based Medicine version 2009. The strength of recommendations was formed by multiple step formalized procedures to reach a consensus. Efficacy, risks, patient preferences and applicability of available therapies were weighed up against each other. The guidelines were reviewed and approved by the board of directors of the societies engaged in the development of the guidelines.

Results and Conclusion: Meditative movement therapies (e.g. qi gong, tai chi and yoga) are strongly recommended. Acupuncture and weight reduction in cases of obesity can be considered.

Lin J, Geng X, Lee EH et al. Yoga reduces the brain's amplitude of low-frequency fluctuations in patients with early psychosis results of a randomized controlled trial. *Schizophr Res.* 2017; 184:141-42p.

McKenna S, Donnelly A, Fraser A et al. Does exercise impact on sleep for people who have rheumatoid arthritis? A systematic review. *Rheumatol Int.* 2017; 37(6): 963-74p.

Abstract:

To systematically search for the availability of evidence for exercise impacting on sleep for people who have rheumatoid arthritis. Two reviewers independently searched seven electronic databases, identified and extracted relevant studies by applying eligibility criteria. Sources of bias were assessed independently by two reviewers using the Cochrane bias assessment tool for randomized controlled trials (RCTs) and Newcastle-Ottawa Quality Assessment Scale for non-RCTs. Data were synthesized using a level of evidence approach. Meta-analyses were deemed to be inappropriate due to the heterogeneity of study designs, measurement tools and interventions. Five studies were included: one RCT; two pilot RCTs and two samples of convenience. A total of 262 people with RA were included. Interventions used were difficult to assess due to the heterogeneity of study designs and the inclusion of two using different types of yoga as an intervention. Different sleep outcome measures were used thus, it was not feasible to pool results. Studies had a high risk of bias. This review could find no consistent or conclusive evidence on whether exercise impacts on sleep in people who have rheumatoid arthritis, therefore no firm conclusions can be made. However, there is some indication that exercise may have positive benefits on sleep in people who have rheumatoid arthritis.

Further studies with improved study designs, using subjective and objective measures, are needed.

Meister K, Juckel G. Systematic review of mechanisms of change in body-oriented yoga in major depressive disorders. *Pharmacopsychiatry*. 2017; Jun 1. doi: 10.1055/s-0043-111013.

Abstract:

Introduction: Despite empirical evidence for the efficacy of body-oriented yoga as add-on treatment for major depressive disorder (MDD), the specific mechanisms by which yoga leads to therapeutic changes remain unclear. By means of a systematic review, we evaluate how the field is progressing in its empirical investigation of mechanisms of change in yoga for MDD.

Methods: To identify relevant studies, a systematic search was conducted.

Results: The search produced 441 articles, of which 5 were included, that empirically examined 2 psychological mechanisms (mindfulness, rumination) and 3 biological mechanisms (vagal control, heart rate variability [HRV], brain-derived neurotrophic factor [BDNF], cortisol). 2 studies found that decreased rumination and 1 study that increased mindfulness was associated with the effect of yoga on treatment outcome. In addition, preliminary studies suggest that alterations in cortisol, BDNF, and HRV may play a role in how yoga exerts its clinical effect.

Discussion: The results suggest that body-oriented yoga could work through some of the theoretically predicted mechanisms. However, there is a need for more rigorous designs that can assess greater levels of causal specificity.

Moody K, Abrahams B, Baker R et al. Randomized trial of yoga for children hospitalized with sickle cell vaso-occlusive crisis. *J Pain Symptom Manage*. 2017; 53(6):1026-34p.

Abstract:

Context: Sickle cell disease (SCD) vaso-occlusive crisis (VOC) remains an important cause of acute pain in pediatrics and the most common SCD complication. Pain management recommendations in SCD include nonpharmacological interventions. Yoga is one nonpharmacological intervention that has been shown to reduce pain in some populations; however, evidence is lacking in children with VOC.

Objectives: The primary objective of this study was to compare the effect of yoga vs. an attention control on pain in children with VOC. The secondary objectives were to compare the effect of yoga vs. an attention control on anxiety, lengths of stay, and opioid use in this population.

Methods: Patients were eligible if they had a diagnosis of SCD, were 5-21 years old, were hospitalized for uncomplicated VOC, and had an admission pain score of ≥ 7 . Subjects were stratified based on disease severity and randomized to the yoga or control group.

Results: Eighty-three percent of patients approached (N = 73) enrolled on study. There were no significant differences in baseline clinical or demographic factors between groups. Compared with the control group, children randomized to yoga had a significantly greater reduction in mean pain score after one yoga session (-0.6 ± 0.96 vs. 0.0 ± 1.37 ; $P = 0.029$). There were no significant differences in anxiety, lengths of stay, or opioid use between the two groups.

Conclusion: This study provides evidence that yoga is an acceptable, feasible, and helpful intervention for hospitalized children with VOC. Future research should further examine yoga for children with SCD pain in the inpatient and outpatient settings.

Mooventhan A, Nivethitha L. Evidence based effects of yoga in neurological disorders. *J Clin Neurosci.* 2017; pii: S0967-5868(17)30254-0. doi: 10.1016/j.jocn.2017.05.012

Abstract:

Though yoga is one of the widely used mind-body medicine for health promotion, disease prevention and as a possible treatment modality for neurological disorders, there is a lack of evidence-based review. Hence, we performed a comprehensive search in the PubMed/Medline electronic database to review relevant articles in English, using keywords "yoga and neurological disorder, yoga and multiple sclerosis, yoga and stroke, yoga and epilepsy, yoga and Parkinson's disease, yoga and dementia, yoga and cerebrovascular disease, yoga and Alzheimer disease, yoga and neuropathy, yoga and myelopathy, and yoga and Guillain-Barre syndrome". A total of 700 articles published from 1963 to 14th December 2016 were available. Of 700 articles, 94 articles were included in this review. Based on the available literature, it could be concluded that yoga might be considered as an effective adjuvant for the patients with various neurological disorders.

Papp ME, Wandell PE, Lindfors P et al. Effects of yogic exercises on functional capacity, lung function and quality of life in participants with obstructive pulmonary disease: A randomized controlled study. *Eur J Phys Rehabil Med.* 2017; 53(3):447-61p.

Abstract:

Background: Knowledge of hatha yogic exercises, the most used yoga style, for increasing functional capacity in patients with obstructive pulmonary diseases remains limited.

Aim: The aim was to evaluate the effects and feasibility of hatha yoga (HY) compared to a conventional training program (CTP) on functional capacity, lung function and quality of life in patients with obstructive pulmonary diseases.

Design: Randomized clinical trial.

Setting: The study was performed at the Karolinska University Hospital, Stockholm, among outpatients.

Population: Thirty-six patients with obstructive pulmonary disease.

Methods: Forty patients were randomized with 36 (24 women, median age =64, age range: 40-84 years) participating in HY (N.=19) or CTP (N.=17). Both HY and CTP involved a 12-week program with a 6-month follow-up. Functional capacity (using the 6-Minute Walk Test), lung function (spirometry), respiratory muscle strength (respiratory pressure meter), oxygen saturation (SpO₂), breathlessness (Borg), respiratory rate (f) and disease-specific quality of life (CRQ) were measured at baseline, at 12 weeks and at a 6-month follow-up.

Results: Testing for interactions (group x time) with ANOVAs showed significant effects on the CRQ fatigue (P=0.04) and emotional (P=0.02) domains, with improvements in the CTP group after the 12-week intervention (P=0.02 and 0.01, respectively) but not in the HY group. No between group effects emerged, however, within each group, significant improvements emerged for the six-minute walk distance (6MWD) after 12-week intervention (HY: mean difference 32.6 m; CI: 10.1-55.1, P=0.014; CTP: mean difference 42.4 m; CI: 17.9-67.0, P=0.006).

Secondary Outcomes: within-group improvements in CRQ appeared in both groups. Within the HY group, f decreased and SpO₂ increased. Improved effects after follow-up emerged only for the CTP group for diastolic blood pressure (P=0.05) and CRQ emotional and fatigue domain (P=0.01).

Conclusions: There were no between-group differences. After 12 weeks, 6MWD improved significantly within both groups. Within the HY group, improvements in the CRQ mastery domain, f and SpO₂ emerged. Within the CTP group, there were improvements in lung function parameter forced vital capacity, respiratory muscle strength and all CRQ-domains. The CTP also exhibited effects on CRQ after the 6months follow-up.

Clinical Rehabilitation Impact: Limited effects of HY and CTP emerged. HY seems feasible and safe as a form of physical exercise for pulmonary disease patients. As part of the rehabilitation, HY may constitute an alternative to other physical training activities and may be a useful addition to formal rehabilitation programs.

Patwardhan K, Tillu G, Jadhav PM. Good practices of publishing AYUSH research: A practical checklist for authors. *J Ayurveda Integr Med.* 2017; S0975-9476(17)30081-5.

Abstract:

Since its inception, Journal of Ayurveda and Integrative Medicine (J-AIM) has been constantly striving to create an environment that inculcates and strengthens "Good Publication Practices (GPP)" amongst students, practitioners and researchers in AYUSH community. The Journal of Ayurveda and Integrative Medicine has been doing this in the form of conducting workshops on scientific writing and research methods on different platforms. This article is based on our experiences and varied discussions that we have had with students, teachers, practitioners and researchers during these interactive sessions, and is intended at addressing the gap that prevails in the domain. The need for such awareness is felt even more strongly ever since the Beall's list of predatory journals has been unpublished. This article tries to fill the void this disappearance has created. We analyze the current scenario of AYUSH publications, enumerate the common

perceptions and concerns among the workers in the field, and consider the periodicals where the doctoral and postgraduate level of Ayurveda research works are being published at present. The article also presents a practical checklist that will be helpful for students and teachers to refer authentic resources and submit their work to an appropriate scholarly journal.

Pickett AC, Cunningham GB. Creating inclusive physical activity spaces: The case of body-positive yoga. *Res Q Exerc Sport*. 2017; 1-10p.

Abstract:

Purpose: Within the modern cultural climate, those in larger bodies face high levels of weight stigma, particularly in sport and physical activity spaces, which serves as a strong barrier to their participation. However, given the strong link between physical activity and general health and well-being for participants, it is important to explore strategies that encourage participation of these individuals. Thus, the current research examined strategies that physical activity instructors use to develop inclusive exercise spaces for all body sizes.

Method: This study employed a series of semistructured qualitative interviews (n = 9) with instructors of body-inclusive yoga classes to explore the ways in which they encourage participation for those in larger bodies.

Results: Emergent themes from the current study suggested support for 6 factors for creating body-inclusive physical activity spaces: authentic leadership, a culture of inclusion, a focus on health, inclusive language, leader social activism, and a sense of community.

Conclusion: This study revealed that leaders must intentionally cultivate inclusion in their spaces to encourage those in nonconforming bodies to participate. These findings have important health and management implications for the sport and physical activity context and provide a basic outline of practical strategies that practitioners can use to foster inclusion in their spaces.

Rubio Arias JA, Marin Cascales E, Ramos Campo DJ et al. Effect of exercise on sleep quality and insomnia in middle-aged women: A systematic review and meta-analysis of randomized controlled trials. *Maturitas*. 2017; 100:49-56p.

Abstract:

Objective: We assessed the effects of programmed exercise (PE) on sleep quality and insomnia in middle-aged women (MAW).

Methods: Searches were conducted in five databases from inception through December 15, 2016 for randomized controlled trials (RCTs) evaluating the effects of PE versus a non-exercising control condition on sleep quality, sleep disturbance and/or insomnia in MAW. Interventions had to last at least 8 weeks. Sleep quality was assessed with the Pittsburgh Sleep Quality Index (PSQI) and insomnia with the Insomnia Severity Index (ISI). Random effects models were used for meta-analyses. The effects on outcomes were

expressed as mean differences (MDs) and their 95% confidence intervals (CI).

Results: Five publications reported data from four RCTs on PE effects during 12-16 weeks on sleep quality (n=4 studies reporting PSQI results) and/or insomnia (n=3 studies reporting ISI results), including 660 MAW. Low-moderate levels of exercise significantly lowered the PSQI score (MD=-1.34; 95% CI -2.67, 0.00; p=0.05) compared with controls. In a subgroup analysis, moderate PE (aerobic exercise) had a positive effect on sleep quality (PSQI score MD=-1.85; 95% CI -3.62, -0.07; p=0.04), while low levels of physical activity (yoga) did not have a significant effect (MD-0.46, 95% CI -1.79, 0.88, p=0.50). In three studies (two studies of yoga, one study of aerobic exercise), there was a non-significant reduction in the severity of insomnia measured with the ISI score (MD -1.44, 95% CI -3.28, 0.44, p=0.13) compared with controls. Heterogeneity of effects among studies was moderate to high.

Conclusion: In middle-aged women, programmed exercise improved sleep quality but had no significant effect on the severity of insomnia.

Saha BL, Seam MOR, Islam MM et al. General perception and self-practice of complementary and alternative medicine (CAM) among undergraduate pharmacy students of Bangladesh. *BMC Complement Altern Med.* 2017; 17(1):314p.

Abstract:

Background: Complementary and Alternative Medicine (CAM) is a combination of herbal medicine, traditional therapies, and mind-body intervention. This descriptive study was designed to assess the knowledge, attitudes, perception and self-use of CAM among Bangladeshi undergraduate pharmacy students. The study also evaluated their opinions about its integration into the pharmacy course curriculum.

Methods: It was a cross-sectional, questionnaire-based study conducted on 250 pharmacy students of five reputed public universities of Bangladesh.

Results: This study revealed that majority of the pharmacy students were using or had previously used at least one type of CAM. Among the students, 59% had used homeopathy followed by Ayurveda (30%), meditation (29%), massage (13%), Unani (9%), yoga (6%) and acupuncture (2%). Students' attitudes towards CAM were influenced by family and friends, books and journals, the internet and to a lesser degree by health practitioners. A significant ($p < 0.05$) number of students had knowledge about CAM. A majority of the students (90%) had positive, while 10% had negative attitudes towards CAM. Lack of knowledge and trained professionals were found to be the major interruptions to CAM use. 84.45% acknowledged the importance of knowledge about CAM for them as future healthcare practitioners. Furthermore, the majority of the students also believed that ideas and methods of CAM would be beneficial for conventional medicine.

Conclusions: From the findings of the study, it can be recommended that an approach should be taken to educate the students about the fundamentals of CAM use so that it may fulfill the professional needs of our future pharmacists.

Saper RB, Lemaster C, Delitto A et al. Yoga, Physical Therapy, or Education for Chronic Low Back Pain: A Randomized Noninferiority Trial. *Ann Intern Med.* 2017;

Jun 20. doi: 10.7326/M16-2579.

Abstract:

Background: Yoga is effective for mild to moderate chronic low back pain (cLBP), but its comparative effectiveness with physical therapy (PT) is unknown. Moreover, little is known about yoga's effectiveness in underserved patients with more severe functional disability and pain.

Objective: To determine whether yoga is noninferior to PT for cLBP.

Design: 12-week, single-blind, 3-group randomized noninferiority trial and subsequent 40-week maintenance phase. (ClinicalTrials.gov: NCT01343927).

Setting: Academic safety-net hospital and 7 affiliated community health centers.

Participants: 320 predominantly low-income, racially diverse adults with nonspecific cLBP.

Intervention: Participants received 12 weekly yoga classes, 15 PT visits, or an educational book and newsletters. The maintenance phase compared yoga drop-in classes versus home practice and PT booster sessions versus home practice.

Measurements: Primary outcomes were back-related function, measured by the Roland Morris Disability Questionnaire (RMDQ), and pain, measured by an 11-point scale, at 12 weeks. Prespecified noninferiority margins were 1.5 (RMDQ) and 1.0 (pain). Secondary outcomes included pain medication use, global improvement, satisfaction with intervention, and health-related quality of life.

Results: One-sided 95% lower confidence limits were 0.83 (RMDQ) and 0.97 (pain), demonstrating noninferiority of yoga to PT. However, yoga was not superior to education for either outcome. Yoga and PT were similar for most secondary outcomes. Yoga and PT participants were 21 and 22 percentage points less likely, respectively, than education participants to use pain medication at 12 weeks. Improvements in yoga and PT groups were maintained at 1 year with no differences between maintenance strategies. Frequency of adverse events, mostly mild self-limited joint and back pain, did not differ between the yoga and PT groups.

Limitations: Participants were not blinded to treatment assignment. The PT group had disproportionate loss to follow-up.

Conclusion: A manualized yoga program for nonspecific cLBP was noninferior to PT for function and pain.

Tew GA, Howsam J, Hardy M et al. Adapted yoga to improve physical function and health-related quality of life in physically-inactive older adults: A randomised controlled pilot trial. *BMC Geriatr.* 2017; 17(1):131p.

Abstract:

Background: Yoga is a holistic therapy of expanding popularity, which has the potential

to produce a range of physical, mental and social benefits. This trial evaluated the feasibility and effects of an adapted yoga programme on physical function and health-related quality of life in physically-inactive older adults.

Methods: In this randomised controlled pilot trial, 52 older adults (90% female; mean age 74.8 years, SD 7.2) were randomised 1:1 to a yoga programme or wait-list control. The yoga group (n = 25) received a physical activity education booklet and were invited to attend ten yoga sessions during a 12-week period. The control group (n = 27) received the education booklet only. Measures of physical function (e.g., Short Physical Performance Battery; SPPB), health status (EQ-5D) and mental well-being (Warwick-Edinburgh Mental Well-being Scale; WEMWBS) were assessed at baseline and 3 months. Feasibility was assessed using course attendance and adverse event data, and participant interviews.

Results: Forty-seven participants completed follow-up assessments. Median class attendance was 8 (range 3 to 10). At the 3-month follow-up, the yoga group had a higher SPPB total score compared with the control group (mean difference 0.9, 95% confidence interval [CI] -0.3 to 2.0), a faster time to rise from a chair five times (mean difference - 1.73 s, 95% CI -4.08 to 0.62), and better performance on the chair sit-and-reach lower-limb flexibility test (mean difference 5 cm, 95% CI 0 to 10). The yoga group also had superior health status and mental well-being (vs. control) at 3 months, with mean differences in EQ-5D and WEMWBS scores of 0.12 (95% CI, 0.03 to 0.21) and 6 (95% CI, 1 to 11), respectively. The interviews indicated that participants valued attending the yoga programme, and that they experienced a range of benefits.

Conclusions: The adapted yoga programme appeared to be feasible and potentially beneficial in terms of improving mental and social well-being and aspects of physical function in physically-inactive older adults. An appropriately-powered trial is required to confirm the findings of the present study and to determine longer-term effects.

Vergeer I, Bennie JA, Charity MJ et al. Participation trends in holistic movement practices: A 10-year comparison of yoga/Pilates and t'ai chi/qigong use among a national sample of 195,926 Australians. *BMC Complement Altern Med.* 2017; 17(1):296p.

Abstract:

Background: In recent decades, the evidence supporting the physical and mental health benefits of holistic movement practices such as yoga and t'ai chi have become increasingly established. Consequently, investigating the participation prevalence and patterns of these practices is a relevant pursuit in the public health field. Few studies have provided population-level assessment of participation rates, however, and even fewer have focused on patterns over time. The purpose of this study was to examine participation prevalence and trends in yoga/Pilates and t'ai chi/qigong over a ten-year period in a nationally representative sample of Australians aged 15 years and over, with particular attention to sex and age. A secondary purpose was to juxtapose these findings with participation trends in traditional fitness activities over the same period.

Methods: Data comprised modes and types of physical activity, age, and sex variables collected through the Exercise, Recreation and Sport Survey (ERASS), a series of

independent cross-sectional Australia-wide surveys conducted yearly between 2001 and 2010. For each year, weighted population estimates were calculated for those participating in yoga/Pilates, t'ai chi/qigong, and fitness activities (e.g. aerobics, calisthenics). Linear regression and multiple logistic regression analyses were used to examine trends in prevalence rates over time and differences among sex and age (15-34; 35-54; 55+ years) groups, respectively.

Results: Average prevalence rates between 2001 and 2010 were 3.0% (95% CI 2.9-3.1) for yoga/Pilates, 0.6% (95% CI 0.5-0.6) for t'ai chi/qigong, and 19.2% (95% CI 18.9-19.4) for fitness activities. Across the decade, overall participation rates remained relatively stable for yoga/Pilates and t'ai chi/qigong, while increasing linearly for fitness activities. For both genders and in all three age groups, participation in fitness activities increased, whereas only in the 55+ age group was there a significant increase in yoga/Pilates participation; participation in t'ai chi/qigong declined significantly in the two younger age groups.

Conclusions: Participation rates in yoga/Pilates and t'ai chi/qigong in Australia were low and relatively stable. As fitness activities increased in popularity across the decade, holistic movement practices did not. These findings point to the need to investigate activity-specific barriers and facilitators to participation, including intrapersonal, interpersonal, organisational, and environmental factors.

Vinoski E, Webb JB, Warren Findlow J et al. Got yoga?: A longitudinal analysis of thematic content and models' appearance-related attributes in advertisements spanning four decades of Yoga Journal. *Body Image*. 2017; 21:1-5p.

Abstract:

Yoga has become an increasingly common health practice among U.S. adults over the past decade. With this growth in popularity, yoga-related print media have been criticized for shifting away from yoga's traditional philosophies and promoting a thin, lean ideal physique representing the "yoga body." The purpose of this study was to (a) analyze the presence and content of advertisements over the 40-year publication history of Yoga Journal magazine and (b) explore female advertisement models' socio-demographic and appearance-related attributes over time. Results suggested that Yoga Journal now contains significantly more advertisements for food, nutritional supplements, and apparel and fewer advertisements for meditation and nutritional practices than in its early years of publication. Models were more frequently rated as White and in their 20s and 30s in recent years of publication. Trends in model body size matched shifts in culturally dominant body ideals over time. Implications and future research directions are considered.

Ward L, Stebbings S, Athens J et al. Yoga for the management of pain and sleep in rheumatoid arthritis: a pilot randomized controlled trial. *Musculoskeletal Care*. 2017; doi: 10.1002/msc.1201.

Abstract:

Objective: The aim of the present study was to determine the feasibility of a relaxation-

based yoga intervention for rheumatoid arthritis, designed and reported in accordance with Delphi recommendations for yoga interventions for musculoskeletal conditions.

Methods: Participants were recruited from a hospital database, and randomized to either eight weekly 75-min yoga classes or a usual care control. Feasibility was determined by recruitment rates, retention, protocol adherence, participant satisfaction and adverse events. Secondary physical and psychosocial outcomes were assessed using self-reported questionnaires at baseline (week 0), week 9 (primary time point) and week 12 (follow-up).

Results: Over a 3-month period, 26 participants with mild pain, mild to moderate functional disability and moderate disease activity were recruited into the study (25% recruitment rate). Retention rates were 100% for yoga participants and 92% for usual care participants at both weeks 9 and 12. Protocol adherence and participant satisfaction were high. Yoga participants attended a median of seven classes; additionally, seven of the yoga participants (54%) reported continuing yoga at home during the follow-up period. No serious adverse events were related to the study. Secondary outcomes showed no group effects of yoga compared with usual care.

Conclusions: A relaxation-based yoga programme was found to be feasible and safe for participants with rheumatoid arthritis-related pain and functional disability. Adverse events were minor, and not unexpected from an intervention including physical components. This pilot provides a framework for larger intervention studies, and supports further exploration of yoga as a complex intervention to assist with the management of rheumatoid arthritis.

Wims ME, McIntyre SM, York A et al. Use of Yoga by Physical Therapists in the United States. *Int J Yoga Therap.* 2017; doi: 10.17761/IJYT2017_Research_Covill_Epub.

Abstract:

How physical therapists (PTs) in the United States currently use yoga in their clinical practices is unknown. The purpose of this study was to determine how PTs in the United States view yoga as a physical therapy (PT) tool and how PTs use yoga therapeutically. The authors conducted a 24-item survey via electronic communications of the Geriatric, Orthopedic, Pediatric, and Women's Health Sections of the American Physical Therapy Association. Participants (n = 333) from 47 states and the District of Columbia replied. Reported use of therapeutic yoga among participants was high (70.6%). Of those participants, nearly a third use asana and pranayama only. Most participants using therapeutic yoga also include additional mindfulness-related elements such as sensory awareness, concentration/focus, and/or meditation. Most participants learned about yoga through personal experiences, with many participants citing lack of familiarity in using yoga in PT practice. Safety is the primary concern of participants when recommending yoga to patients as an independent health and wellness activity. Interdisciplinary communication between PTs, yoga therapists, and yoga teachers is warranted to address the post-discharge needs of clients. Healthcare changes have required PTs to adapt to a biopsychosocial-spiritual model (BPSS) for improved patient outcomes. Therapeutic yoga may provide an opportunity for PTs to expand their role in

health and wellness and chronic disease management. There is opportunity for continuing education in therapeutic yoga for PTs.

Wise J. Yoga is reasonable alternative to physical therapy for lower back pain, say researchers. *BMJ*. 2017; 357: j2964.

Yoga, Physical Therapy, or Education for Chronic Low Back Pain. *Ann Intern Med*. 2017; Jun 20. doi: 10.7326/P17-9039.