

Review Article

ROLE OF NATUROPATHY & YOGA IN PROPHYLAXIS DURING COVID-19

Shivani Agarwal^{*a}, Kartikay Prakash^b, Manjari Mittal^a

a Moradabad Educational Trust Group of Institutions Faculty of Pharmacy, Moradabad, Uttar Pradesh, India.

b Radha Govind Institute of Pharmacy, Chandausi, Moradabad, Uttar Pradesh, India

** Corresponding Author: Tel. No. : +919456689876, E-mail: shivaniagarwalmdb2013@gmail.com*

ARTICLE INFO

Received 26 April 2020

Revised 1 July 2020

Accepted 17 August 2020

Keywords:

- Naturopathy
- Yoga,
- Prophylaxis
- COVID-19
- India.

ABSTRACT

Whole planet is now suffering from a respiratory illness or disease entitled as CORONAVIRUS DISEASE. This disease is caused by a very highly infectious virus known as SARS-CoV-2 or COVID-19 virus. Coronavirus disease is a highly contagious disease. WHO declared this disease as a Pandemic and till date, COVID-19 was spread in more than 215 countries and territories. Naturopathy is a traditional system of medicine and used since ancient time. Naturopathy can be considered as the system of lifestyle medicine. This review covers how Yoga and Naturopathy plays a important role in prophylaxis during COVID-19 as well as some measures and methods for preventive care, immune enhancement and symptom management.

1. INTRODUCTION

COVID-19 or Coronavirus Disease-2019 is caused by a very new virus of Coronavirus family known as SARS-CoV-2. This disease is also known as Severe Acute Respiratory Syndrome-2. Coronavirus disease-2019 is a deadly airborne, infectious, zoonotic and a very highly contagious global pandemic. This pandemic had been affected more than 200 countries worldwide.

1.1 SARS-CoV-2

This virus is seventh known Coronavirus. N- CoV belongs to the genus “Beta-Coronavirus” and family “Coronaviridae” {1,2}. SARS-CoV-2 is an enveloped, +ve sense, single stranded RNA virus of zoonotic origin. The disease “COVID-19” was officially named by WHO (World Health Organisation), later ICTV (International Committee on Taxonomy of Viruses) named this “Severe Acute Respiratory Syndrome-2[3]. This virus is seventh known Coronavirus. N- CoV belongs to the genus “Beta-Coronavirus” and family “Coronaviridae” {1,2}. SARS-CoV-2 is an enveloped, +ve sense, single stranded RNA virus of zoonotic origin. The disease “COVID-19” was officially named by WHO (World Health Organisation), later ICTV (International

Committee on Taxonomy of Viruses) named this “Severe Acute Respiratory Syndrome-2[3].

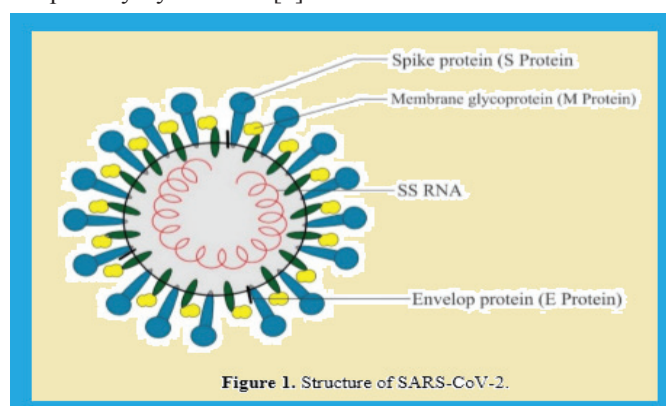


Figure 1. Structure of SARS-CoV-2.

Fig. 1: Structure of SARS-CoV-2

Most virus of coronavirus family aimed to infect either upper or lower airways. Upper respiratory infection tends to be milder and spread easily, while lower respiratory infection is more severe and transmit hardly as compare to former. SARS-CoV-2 virus infects both upper as well as lower respiratory infection. Apart from SARS-CoV-2, there are six investigated virus which infect

human. Out of these six (SARS, MARS, 229E, OC43, NL63, HKU1), two (SARS & MARS) are zoonotic and lethal while the other four (229E, OC43, NL63, HKU1) are known to cause common cold and less lethal as compare to SARS & MARS (Table 1) [4,5].

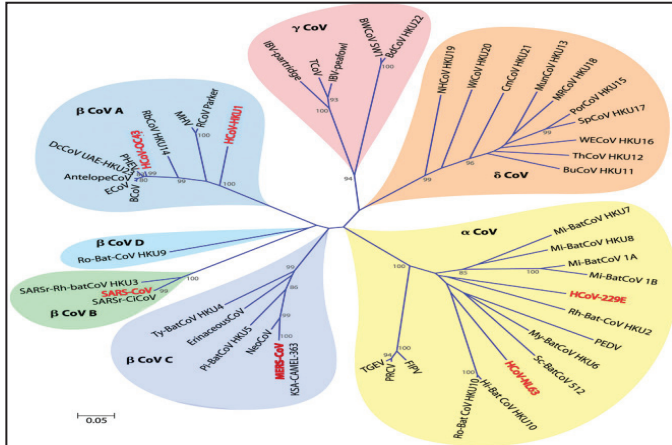


Fig. 2: Types of Corona viruses

Source: <https://www.sciencedirect.com/science/article/pii/S097401237515600031X>, Accessed date: 25/08/2020

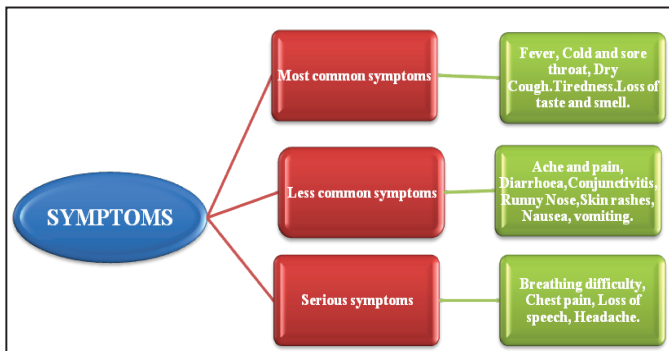


Fig. 3 Symptoms of covid-19/ problems associated with covid-19[53,54]

Table 1: Modes of transmission

S. No	Mode of transmission
1.	Contact and Droplet transmission
2.	Airborne transmission
3.	Fomite transmission
4.	Other transmission

1.3 Relationship between Covid-19 and yoga

During this pandemic, the whole world is facing many psychological problems and they are also targeted by anxiety, stress and mental illness etc. To encounter this we had to understand why the yoga plays a vital role against COVID-19, the relationship between yoga and COVID-19 can be easily understand by this relationship chart (figure 4). Yoga is a very helpful stress reducing technique to encounter the psychological

disorder as well as Covid-19. Yoga has a unique level of advantages (figure 5) [52]

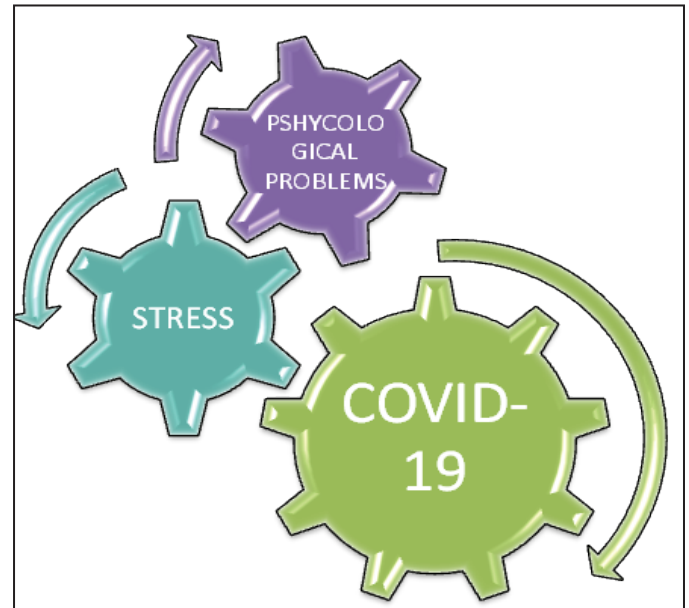


Fig. 4: Relationship between Covid-19 and yoga



Fig. 5: Advantages of yoga

2. NATUROPATHY

In India, Naturopathy is a traditional system of medicine and used since ancient time. Naturopathy can be considered as the system of lifestyle medicine. Naturopathy works by modulating the various factors those are very useful to enhance body's Immunity. Psychologic stress, fitness and physical activity, sleep, food, nutrition, co-morbid condition and as well as lifestyle, are such factors which also play an important role in maintaining the body's Immunity response.. During this pandemic, the interventions of naturopathy Can be used as preventive measures against COVID-19[6,7]. Worldwide lockdown and isolation

is the main reasons behind the anxiety and psychological stress developed in majority of the population, this anxiety and stress can regulate immunity responses and defense of our body. This may result into the contract of the infection and resulting into enhancement of its severity [8].

2.1 Prophylaxis

Prophylaxis is defined as the study of prevention of disease [9].

2.2 Preventive Care

Naturopathy system is working on the principle of fixing someone's life followed by modulating immunity, then used as a preventive technique. To enhance and improve immunity against certain types of infections, Several and useful methods and measure are used. These measures and methods are also playing a vital role in improving the health of those patients who are suffering from any comorbid illness such as Diabetes, Hypertension, and patient who have increased their susceptibility to COVID-19[10]

2.3 Immunity Enhancement Measures

According to the Naturopathy system, there are various immunity enhancement measures for enhancing the body's immunity, some of them are listed below:

2.3.1 Developing Mucosal immunity and decrease the airway reactivity

Table 1: Measures for Developing Mucosal immunity and decrease the airway reactivity [11-14]

S. No.	Process	Measures	Timing
1.	GARGLING	Do gargles with hot water with salt followed by neem oil.	Daily
2.	NASAL IRRIGATION	With Water and Ghee.	Daily
3.	NETI-KRIYA	Vata-Neti, 2. Jananeti, followed by Kapalbharti	Twice a week.
4.	AROMATHERAPY	with Aromatic oil (Peppermint oil, Eucalyptus oil and Tulsi).	Daily
5.	YOGA	Do yoga and Mindfulness exercise on regular basis.	Daily

2.3.2 Improving innate immunity or immune homeostasis

Table 2. Improving innate immunity or immune homeostasis[15,16].

S. No.	Process	Measures	Timing
1.	Intermittent fasting	Keep fast for one day per week.	Once a week
2.	Regular exercise	Keep doing exercise on regular basis.	Daily

2.4 Preventive Care Measures

According to the Naturopathy system, there are various measures for preventive care, some of them are listed below:

Reducing stress

Table 3: Preventive measures for Reducing Stress [6,8].

S. No.	Measures	Timing
1.	Regular YOGA	For 20 minutes/day
2.	Loosening/ breathing exercise	For 5 minutes/day
3.	Suryanamaskar	For 6 minutes/day
4.	Yogic relaxation techniques	For 5 minutes/day
5.	Kapalabharti	For 3 rounds/day
6.	Nadishodhana pranayam	For 9 rounds/day
7.	Ujjayi pranayam	For 9 rounds/day
8.	Bramari	For 3 rounds/day

2.4.1 Improving sleep

Table 4: Preventive measures for Improving sleep.

S. No.	Measures
1.	To obtain modulate immunity, take proper 8 hrs sleep [17,18].
2.	Hot foot immersion with cold compress to head for insomnia[17,18].

2.4.2 For better Respiratory health and fitness

Table 5: Preventive measures for better Respiratory health and fitness.

S. No.	Purpose	Measures
1.	To prevent Respiratory Infection, for Cardio respiratory fitness	Walking 30 minutes daily
2.	Improving Stamina	Endurance exercise for 1 hr daily [19].

2.5 Symptom Management Measures

A. Cold, Coryza-Running nose, Nasal Congestion

- **Steam inhalation:** Use Tulsi, Peppermint and Eucalyptus oil and take steam inhalation[20].
- **Nasal irrigation:** With Saline water, followed by application of Desi-Ghee on both nostrils[21,22].
- **Neti-Kriya:** 1. Neti-Kriya, 2. Jananeti, 3.Kapalabharti [23].

B. Sore throat, Hoarseness of Voice

- **Gargling:** keep doing gargles with Hot Saline water & neem water gargles followed by decoction with Honey[24].
- **Kashayam:** perform this by turmeric and coriander kashayam with the black pepper[25].

C. Expectorant Cough

- Ginger possesses an Anti-inflammatory, Anti-Spasmodic, Anti-tussive, Expectorant activity[26].
- Chew Ginger at regular time interval.

D. Dry Cough

- **Kashayam:** Make Ginger Kashayam in milk with Honey and then add cinnamon, black pepper, cloves, turmeric in it. This is very beneficial for Dry Cough[25].

E. Headache

- **Aromatherapy:** Take Lavander or Tulsi oil for Aromatherapy[23].

F. Fever

- Cold Sponging and Chest pack.

G. Wheeze, Chest Congestion

- **Chair breathing:** To reduce the Respiratory effect, Chair Breathing is very beinificial for this.
- Application of Cold Chest Pack plays a significant role in wheeze and chest congestion.
- Hot Fomentation to Chest and upper Back gives a very big relief.
- Hot Foot Immersion is also very useful to treat headache.

H. Malaise and Fatigue

- **Immunity Booster:** Take Lemon water with Honey, gonna very beneficial for the patients[27].
- **Vitamin:** Take Vitamin C, Vitamin D.
- **Carbohydrates:** Glucose.
- **Proteins:** Plant proteins[27].

I. For treating pshycological problems (Stress, Anxiety and Depression)

- **Aroma Therapy:** Taking Lavander, Basil oil and Lemon Grass oil for aroma therapy is best remedy for pshycological disorders.

2.6 What to Have

- ✓ Take a balanced diet.
- ✓ Take plenty of water(atleast 8-10 glass water/day.)
- ✓ Prepare food in less oil of fats as much as possible.
- ✓ Have protein and fiber rich food.
- ✓ Add spices in your food.
- ✓ Have fruits and Vegetables.
- ✓ Have Zinc & Salenium rich Food.
- ✓ Have aleast one glass of Curd/day.
- ✓ Have Boiled vegetables.

2.7 What to avoid

- ✗ Cold beverages, Coffee, canned juice etc.
- ✗ Confectionary and Bakery products
- ✗ Refined sugars
- ✗ High Salt intake
- ✗ Food in eateries
- ✗ Smoking
- ✗ Alcohol consumption
- ✗ Oily food
- ✗ Chinese Food and snakes.

3. YOGA THERAPY SECTION OR MEASURES (TABLE 6)

A. Breathing Modules and exercise:

- Hands in and out, stretching Breathing.
- Bhujangasana Breathing.
- Shalabhasana Breathing.
- Tiger Breathing[28].

B. Asanas (figure 6)

- Suryanamaskar
- Padahastasana.
- Ardha chakrasana.
- Trikonasana.
- Sulabha Matsyendrasana.
- Makarasana
- Bhujangasana.
- Shalabhasana[29,30].

C. Chair Breathing [31].

D. Pranayama:

- Bhastrika
- Ujjayi
- Nadishodhana
- Bramari[32-34].

E. Yogic relaxation techniques:

- Muscle relaxation
- Breath relaxation.
- Awareness relaxation
- Deep relaxation[35].



Fig. 6: Different body positions for pranayama

(Source: <https://www.ayush.gov.in/docs/yoga-guidelines.pdf>
 Accessed date: 20/09/2020)

Table 6: Advantages of yoga therapy module or measures

S. No.	Yoga practices	Examples	Advantages
1.	YOGIC CLEANING PRACTICES	<ul style="list-style-type: none"> Jalaneti Vataneti Sutraneti 	<ul style="list-style-type: none"> Cleans the sinuses. beneficial in allergic conditions. reduces activity of upper respiratory system[36,37].
2.	YOGIC JOINT MOVEMENTS	<ul style="list-style-type: none"> Neck movements. Shoulder movements. Trunk Movements. Knee movements. Ankle movements. 	<ul style="list-style-type: none"> Increases blood circulation. Reduces stiffness which enhance joint flexibility. Facilitate asana practices[38].

3.	YOGASANA	<ul style="list-style-type: none"> Ushthasana Uthana Mandukasana Vakarasana Bhujangasana Sarala Matsayana 	<ul style="list-style-type: none"> Enhance chest expansion. Develop Cardio-pulmonary functions[38].
4.	KAPALABHARTI		<ul style="list-style-type: none"> Increases pulmonary functions. Reduces secretions. Cleanse Frontal sinuses.
5.	PRANAYAMA	<ul style="list-style-type: none"> Ujjayi NadiSodhan Pranayam Bhramari 	<p>Ujjayi:</p> <ul style="list-style-type: none"> increases O₂ saturation in body[39]. <p>Bhramari:</p> <ul style="list-style-type: none"> increases Nasal Nitric Oxide(NO). increase blood flow. Has anti-inflammatory action[40,41]. <p>Nadi Sodhana Pranayam:</p> <ul style="list-style-type: none"> Reduces the sympathetic activity. Stimulate Vagal activity. Decreases stress and anxiety[42].
6.	PRATYAAHARA	<ul style="list-style-type: none"> Yoga Nidra 	<ul style="list-style-type: none"> Decreases in sympathetic arousal and reduced emotional distress. Improves sleep quality. Helps to keep the mind calm[43,44].
7.	MEDITATIVE PRACTICES	<ul style="list-style-type: none"> Dharana Dhayana 	<ul style="list-style-type: none"> Meditation helps to reduce anxiety and stress[45]. Reduces Cortisol level. Enhance the α- Brain wave. Keep the body stable. Keep the mind calm. Balance the physiology of Neuro-Endocrine system. Enhance Immune system[45].

4. HERBAL REMEDIES EFFECTIVE AGAINST COVID-19

There is an overview on the herbal remedies which are effective in the treatment of COVID-19. List of herbal remedies are given below (Table 7) **Table 7:** An overview on the herbal remedies which are effective in the treatment of COVID-19[46-51]

Name of Herbal Remedies	Family	Botanical Name	Parts Used	Chemical Constituent	Classical Catalogue
Gokshura	Zygophyllaceae	Tribulus terrestris	Fruit	• Steroidalsapogrnins, diosgenin, gitogenin, chlorogenin.	Anti urolithiatic, MAOI, antimicrobial activity.
Bramhi	Plantaginaceae	Bacopa monneiri	Whole	• Bacosides A & B.	Antioxidant, antiviral, anti-carcinogenic.
Kantakari	Solanaceae	Solanum xan-thocarpum	Fruit	• Saponine.	Antioxidant, bronchodilator.
Methika	Fabaceae	Trigonella foenum graecum [L.]	Seeds	• Diosgenin, Neogitogenin, Homorientin, trigogenine	Antidiabetic, antioxidant, antigenotoxic.
Arishtaka	Sapindaceae	Sapindus mucorossi	Fruit	• Triterpenoid Saponine, Sapindoside A&B, acetylated triterpene bisdesmoside saponine.	Antiprotozoal, Insecticidal activity.
Liquorice	Fabaceae	Glycyrrhiza glabra	Root	• Glycyrrhizin • Isoliquiritigenin • Glycyrrhetic acid • Glycyrrhizin	Qi-reinforcing.
Mulberry Bark	Moraceae.	Morus alba L.	Bark		Antitussive, Antiasthmatic.

Acknowledgements

The authors are thankful to their parents and feels condolence for the patient who died due to the COVID-19.

REFERENCES

- [1] David.M, COVID-19 (CORONAVIRUS): A Global Emergency Outbreak And Its Implications In India. International Journal of Zoology and Applied Biosciences, 2020, 5(2), 89–98. <http://doi.org/10.5281/zenodo.3755267>
- [2] Mandal.S ,Deadly Outbreak Of Covid-19: Corona Virus, Migration, Global Pandemic, Some Treatments And Precautions. 2020, DOI: <https://doi.org/10.24941/ijcr.38549.05.2020>
- [3] Wang, L., Wang, Y., A review of the 2019 Novel Coronavirus (COVID-19) based on current evidence. International Journal of Antimicrobial Agents, 2020, 105948. doi:10.1016/j.ijantimicag.2020.105948 <https://sci-hub.tw/10.1016/j.ijantimicag.2020.105948>
- [4] Hafeez A, Ahmad S, Siddqui S, Ahmad M, Mishra S. A Review of COVID-19 (Coronavirus Disease-2019) Diagnosis, Treatments and Prevention. EJMO. 2020; 4(2): 116-125
- [5] <https://www.sinobiological.com/research/virus/sars-coronavirus-overview>
- [6] Pedersen, A., Zachariae, R., Influence of psychological stress on upper respiratory infection--a meta-analysis of prospective studies. Psychosomatic medicine, 2010, 72(8), 823–832. <https://doi.org/10.1097/PSY.0b013e3181f1d003>
- [7] Xiao, H., Zhang, Y., Social Capital and Sleep Quality in Individuals Who Self-Isolated for 14 Days During the Coronavirus Disease 2019 (COVID-19) Outbreak in January 2020 in China. Medical science monitor : international medical journal of experimental and clinical research, 2020, 26, e923921. <https://doi.org/10.12659/MSM.923921>
- [8] Available at <https://www.ayush.gov.in/docs/naturopathy-guidelines.pdf> , Accessed date: 16/09/2020 11.00 am IST.
- [9] Available at <https://www.webmd.com/oral-health/qa/what-is-isophylaxis> , Accessed date: 16/09/2020 11.10 am IST.
- [10] Duan, L., & Zhu, G., Psychological interventions for people affected by the COVID-19 epidemic. The lancet. Psychiatry, 2020, 7(4), 300–302. [https://doi.org/10.1016/S2215-0366\(20\)30073-0](https://doi.org/10.1016/S2215-0366(20)30073-0)
- [11] Agnihotri S, Kant S., Role of Jananeti and pranayama in allergic rhinitis with asthma. Int J Yoga - Philosop Psychol Parapsychol, 2016; 4: 3-7
- [12] Meera, S., M., Sreedhar, C., A review on the therapeutic effects of NetiKriya with special reference to JalaNeti. Journal of Ayurveda and integrative medicine, 2020, 11(2), 185–189. <https://doi.org/10.1016/j.jaim.2018.06.006>
- [13] Sienkiewicz, M., Łysakowska, M., The potential of use basil and rosemary essential oils as effective antibacterial agents. Molecules (Basel, Switzerland), 2013, 18(8), 9334–9351. <https://doi.org/10.3390/molecules18089334>
- [14] Eda, N., Shimizu, K., Effects of yoga exercise on salivary beta-defensin 2. European journal of applied physiology, 2013, 113(10), 2621–2627. <https://doi.org/10.1007/s00421-013-2703-y>
- [15] Longo, V. D., & Mattson, M. P., Fasting: molecular mechanisms and clinical applications. Cell metabolism, 2014, 19(2), 181–192. <https://doi.org/10.1016/j.cmet.2013.12.008>
- [16] Martinez-Lopez, N., Tarabra, E., Singh, R., System-wide Benefits of Intermeal Fasting by Autophagy. Cell metabolism, 2017, 26(6), 856–871.e5. <https://doi.org/10.1016/j.cmet.2017.09.020>
- [17] Patel, S. R., Malhotra, A., A prospective study of sleep duration and pneumonia risk in women. Sleep, 2012, 35(1), 97–101. <https://doi.org/10.5665/sleep.1594>

- [18] Cohen, S., Tyrrell, D. A., & Smith, A. P., Psychological stress and susceptibility to the common cold. *The New England journal of medicine*, 1991, 325(9), 606–612. <https://doi.org/10.1056/NEJM199108293250903>
- [19] Gleeson, M., Bishop, N. C., The anti-inflammatory effects of exercise: mechanisms and implications for the prevention and treatment of disease. *Nature reviews. Immunology*, 2011, 11(9), 607–615. <https://doi.org/10.1038/nri3041>
- [20] Madaleno, I., Traditional Medicinal Knowledge in India and Malaysia. *Pharmacognosy Communications*, 2015, 5 (2), 116-129. <http://phcogfirst.com/article/130610.5530/pc.2015.2.3.PharmacognosyCommunications.5.116.10.5530/pc.2015.2.3>
- [21] Ramalingam, S, A pilot, open labelled, randomised controlled trial of hypertonic saline nasal irrigation and gargling for the common cold. *Scientific reports*, 2019, 9(1), 1015. <https://doi.org/10.1038/s41598-018-37703-3>
- [22] Kassel, J. Saline nasal irrigation for acute upper respiratory tract infections. *The Cochrane database of systematic reviews*, 2010, (3), CD006821. <https://doi.org/10.1002/14651858.CD006821.pub2>
- [23] Sujan, M., Influence of hydrotherapy on clinical and cardiac autonomic function in migraine patients. *Journal of neurosciences in rural practice*, 2016, 7(1), 109–113. <https://doi.org/10.4103/0976-3147.165389>
- [24] Verma A, Local health wisdom of rural women using medicinal plants. Vol. 9, *Indian Journal of Traditional Knowledge*. 2010.
- [25] Prasad S, Turmeric, the Golden Spice: From Traditional Medicine to Modern Medicine. In: Benzie IFF, Wachtel-Galor S, editors. *Herbal Medicine: Biomolecular and Clinical Aspects*. 2nd edition. Boca Raton (FL): CRC Press/Taylor & Francis; 2011. Chapter 13. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK92752>
- [26] Chang, Y. K., Labban, J. D., The effects of acute exercise on cognitive performance: a meta-analysis. *Brain research*, 2012, 1453, 87–101. <https://doi.org/10.1016/j.brainres.2012.02.068>
- [27] Organization WH. Cough and cold remedies for the treatment of acute respiratory infections in young children. 2001;
- [28] Ahmad, R., Naqvi, A. A., Evaluation of aromatherapy with lavender oil on academic stress: A randomized placebo controlled clinical trial. *Contemporary clinical trials communications*, 2019, 14, 100346. <https://doi.org/10.1016/j.conctc.2019.100346>
- [29] Arora, S., & Bhattacharjee, J., Modulation of immune responses in stress by Yoga. *International journal of yoga*, 2008 1(2), 45–55. <https://doi.org/10.4103/0973-6131.43541>
- [30] Eda, N., Ito, H., Yoga stretching for improving salivary immune function and mental stress in middle-aged and older adults. *Journal of women & aging*, 2018, 30(3), 227–241. <https://doi.org/10.1080/08952841.2017.1295689>
- [31] Nagarathna R, Nagendra H, India RS-L, 1991 undefined. *Yoga-chai breathing for acute episodes of bronchial asthma*. lungindia.com.
- [32] Singh, V., Wisniewski, A., Effect of yoga breathing exercises (pranayama) on airway reactivity in subjects with asthma. *Lancet* (London, England), 1990, 335(8702), 1381–1383. [https://doi.org/10.1016/0140-6736\(90\)91254-8](https://doi.org/10.1016/0140-6736(90)91254-8)
- [33] Maniscalco, M., Sofia, M., Humming-induced release of nasal nitric oxide for assessment of sinus obstruction in allergic rhinitis: pilot study. *European journal of clinical investigation*, 2004, 34(8), 555–560. <https://doi.org/10.1111/j.1365-2362.2004.01384.x>
- [34] Mahour J., Verma P, Effect of Ujjayi Pranayama on cardiovascular autonomic function tests. *National Journal of Physiology, Pharmacy and Pharmacology*, 2017, 7 (4), 391-395. doi:10.5455/njppp.2017.7.1029809122016
- [35] Benson, H., Greenwood, M. M., The relaxation response: psychophysiological aspects and clinical applications. *International journal of psychiatry in medicine*, 1975, 6(1-2), 87–98. <https://doi.org/10.2190/376W-E4MT-QM6Q-HOUM>
- [36] Meera, S., Vandana Rani, A review on the therapeutic effects of NetiKriya with special reference to JalaNeti. *Journal of Ayurveda and integrative medicine*, 2020, 11(2), 185–189. <https://doi.org/10.1016/j.jaim.2018.06.006>
- [37] Achilles, N., & Mösges, R., Nasal saline irrigations for the symptoms of acute and chronic rhinosinusitis. *Current allergy and asthma reports*, 2013, 13(2), 229–235. <https://doi.org/10.1007/s11882-013-0339-y>
- [38] Tran, M. D., Holly, Effects of Hatha Yoga Practice on the Health-Related Aspects of Physical Fitness. *Preventive cardiology*, 2001, 4(4), 165–170. <https://doi.org/10.1111/j.1520-037x.2001.00542.x>
- [39] Kabitz, H. J., Bremer, The combination of exercise and respiratory training improves respiratory muscle function in pulmonary hypertension. *Lung*, 2014, 192(2), 321–328. <https://doi.org/10.1007/s00408-013-9542-9>
- [40] Maniscalco, M., Weitzberg, E., Assessment of nasal and sinus nitric oxide output using single-breath humming exhalations. *The European respiratory journal*, 2003, 22(2), 323–329. <https://doi.org/10.1183/09031936.03.00017903>
- [41] Maniscalco, M., Sofia, M., Humming-induced release of nasal nitric oxide for assessment of sinus obstruction in allergic rhinitis: pilot study. *European journal of clinical investigation*, 2004, 34(8), 555–560. <https://doi.org/10.1111/j.1365-2362.2004.01384.x>
- [42] Sharma, V. K., Trakroo, M., Effect of fast and slow pranayama on perceived stress and cardiovascular parameters in young health-care students. *International journal of yoga*, 6(2), 2013, 104–110. <https://doi.org/10.4103/0973-6131.113400>
- [43] Livingston, E., & Collette-Merrill, K., Effectiveness of Integrative Restoration (iRest) Yoga Nidra on Mindfulness, Sleep, and Pain in Health Care Workers. *Holistic nursing practice*, 2018, 32(3), 160–166. <https://doi.org/10.1097/HNP.0000000000000266>
- [44] Kim S. D. Psychological effects of yoga nidra in women with menstrual disorders: A systematic review of randomized controlled trials. *Complementary therapies in clinical practice*, 2017, 28, 4–8. <https://doi.org/10.1016/j.ctcp.2017.04.001>
- [45] Lagopoulos, J., Xu, J., Rasmussen, I., Increased theta and alpha EEG activity during nondirective meditation. *Journal of alternative and complementary medicine (New York, N.Y.)*, 2009, 15(11), 1187–1192. <https://doi.org/10.1089/acm.2009.0113>

- [46] <https://ijpsr.com/bft-article/glycyrrhiza-glabra-a-phytopharmacological-review/?view=fulltext>
- [47] <https://www.britannica.com/plant/licorice>
- [48] <http://www.epharmacognosy.com/2012/06/mulberry-bark-sangbaipi-morus-alba.html>
- [49] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3931200/>
- [50] V.C.Randeepraj, V., K.L.Madhuri, K., HERBS/TRADITIONAL MEDICINES USED IN COVID-19. International Journal of Indigenous Herbs and Drugs, 2020, 31-36. Retrieved from <https://www.saapbooks.com/journals/index.php/herbsanddrugs/article/view/88>
- [51] Vidhate R. Sneha, & Wate Priyanka. A Review of Saponine rich herbal drugs on COVID – 19 w.s.r to their Muco- adhesive action. International Journal of Research in Pharmaceutical Sciences, 2020, 11(SPL1), 183-186. <https://doi.org/10.26452/ijrps.v11iSPL1.2347>
- [52] <https://valleyoaks.org/health-hub/the-relationship-between-covid-19-anxiety-and-yoga/#:~:text=Why%20Practice%20Yoga%20During%20the,help%20reduce%20feelings%20of%20anxiety.>
- [53] <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>
- [54] <https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963>