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Effect of yoga mudras in improving the health of users: A precautionary measure practice in daily life for resisting the deadly COVID-19 disease

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1 Introduction

The word yoga was derived from the Sanskrit word yuj and its meaning is “to connect.” Yoga links the individual consciousness with the universal consciousness (Raub, 2002). The yoga practice generates a perfect harmony between body, mind, and nature. Yoga comprises asanas, mudras, and meditation. The asanas and mudras involve stretching of legs and hands, mudras utilize fingers for making postures (Ramos-Jimenez et al., 2009). The yoga practice has significant effects on obesity, cholesterol, blood pressure, diabetes, and cardiac diseases (Innes and Vincent, 2007; Yang, 2007; Gordon et al., 2008). Yoga plays vital role in physical and mental health care, Islamic prayer Salah/Namaaz along with yoga was found to be proficient in improving mental health (Sayeed and Prakash, 2013). The mudras for lung specific diseases especially asthma was highlighted in Saravanan et al. (2019). A systematic study was carried out in Bir (2016) for the clinical applications of yoga in the pediatric population (Birdee et al., 2009). The importance of yoga in emotion, embodiment, and gentrification was explored in (Kern, 2012). The effect of yoga in enhancing cognitive-communication skills was discussed in Namratha et al. (2017). Yoga therapy enhances the physiological functions of the heart and lung and makes the body elastic, induce stem cell trafficking from bone marrow to peripheral blood vessel for potential repair and regeneration of tissues (Shree and Bhonde, 2016).

The increased hectic schedule of life generates stress and the yoga practice nadi-shodhana pranayama reduces stress. The benefits of postoperation therapy using nadi-shodhana pranayama along with physiotherapy are effective in improving lung function and reducing depression, stress, anxiety are highlighted in [Kinabalu \(2005\)](#). Yoga has proven to be beneficial for patients with cardiac arrest or other heart related issues. The severe agitation and apprehension of such events have significant and critical effects on the heart. Pranayama is a type of yogic breathing exercise proven to be efficient in curing lung diseases like asthma, allergic bronchitis, post pneumonia, tuberculosis recovery, and many other occupational diseases. The practice of pranayama modulates cardiac autonomic status and with improvement in cardiac respiratory function, nadi-shodhana pranayama rapidly alters cardio-pulmonary response and reduces blood pressure ([Shankarappa et al., 2012](#)). The pranayama is the art of control breathing, since it is the only autonomic function of the body that can be consciously controlled ([Akhtar et al., 2013](#)). The effect of yoga in enhancing the functionality of anatomical organs is described in [Akhtar et al. \(2013\)](#). The pranayama was meant to improve respiratory functions, but also induce psycho-physical effects in the body. The lung function was found to improve by continuously practicing pranayama ([Dhaniwala et al., 2020](#)). The continuous practice of yoga was found to be proficient in increasing alpha and theta frequency activity, it also alleviates cardiovascular and respiratory diseases ([Basu-Ray et al., 2021](#)). The yoga practices were found to be efficient in the minimization of stress ([Rao et al., 2017](#)). The Bhastrika pranayama has a significant role in the minimization of anxiety and improves the functional connectivity of the brain ([Novaes et al., 2020](#)). The specific mudras for improving the respiratory system efficiency and for curing asthma are discussed in [Saravanan et al. \(2019\)](#). [Section 2](#) highlights the materials and methods. The basic mudras for health care are described in [Section 2.1](#). [Section 2.2](#) describes the mudras and breathing exercise for improving the immunity of the body. [Section 3](#) puts forward the yoga health package system for resisting pandemic disease.



2 Materials and methods

Human beings depend on nature for their livelihood and the human body itself comprises water element (blood), air element (breath), earth element (bones and muscles), fire element (heat), and space element (emptiness). The fingers in the hands correspond to panchaboothas and are depicted in [Fig. 1A](#). Out of five fingers, the thumb depicts fire (agni), the

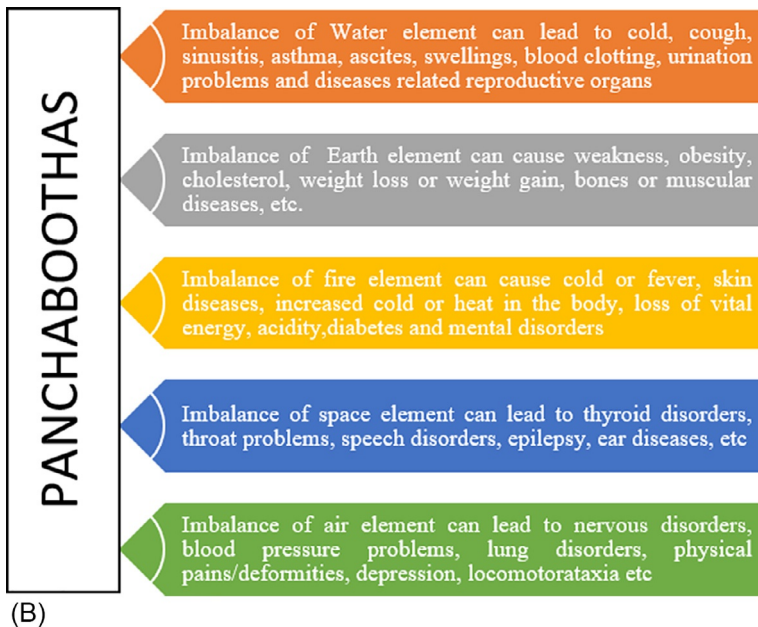


Fig. 1 (A) Panchaboothas in our hand, (B) panchaboothas and their effect on the human body.

index finger depicts air (vayu), the middle finger depicts space (akash), the ring finger depicts earth (prithvi) while the little finger depicts water (jal). The mudras are practiced with fingers, since they are the storehouse of magnetic energy. The practice of mudras helps to balance the energy elements in the body. The imbalance of energy elements is the root cause of diseases and is depicted in Fig. 1B. The mudras regulate the flow of energy elements in the body.

2.1 Basic mudras for health care

Figs. 2 and 3 depict the basic mudras for health care. In Fig. 2, (A) depicts the fingers in stretch out pose, (B) gyan mudra, (C) vayu mudra, (D) shunya mudra, (E) prithvi mudra, (F) surya mudra, (G) varuna mudra.

2.1.1 Gyan mudra

It is also known as the mudra of knowledge and wisdom. It improves the mind concentration during meditation and forms a vital role in pranayama. The consistent practice of this mudra enhances brain activity.

Procedure: The steps in doing the gyan mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The hands are placed in the knees facing upward, the tip of the thumb finger touches the tip of the index finger. A slight pressure has to be applied at the tip. The mind concentration should be on our breath and our eyes should be closed. The gyan mudra pose is depicted in Fig. 2B.

Merits: Relieves from stress, anxiety, depression, and tension. Gives better sleep and improves the blood circulation in the nervous system and pituitary gland.

In Fig. 3, the specifications are as follows: (A) prana mudra, (B) apana mudra, (C) apana vayu mudra, (D) adhimudra.

2.1.2 Vayu mudra

It is associated with the air element in the body. It is specifically applicable for those having an imbalance of air element in the body. It reduces the effect of excess gas in the stomach. This mudra was found to be efficient for those having intensified vata.

Procedure: The steps in doing the vayu mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The tip of the thumb should touch the middle portion of the index finger, the other fingers are kept straight. Slight pressure is applied and the vayu mudra is depicted in Fig. 2C.

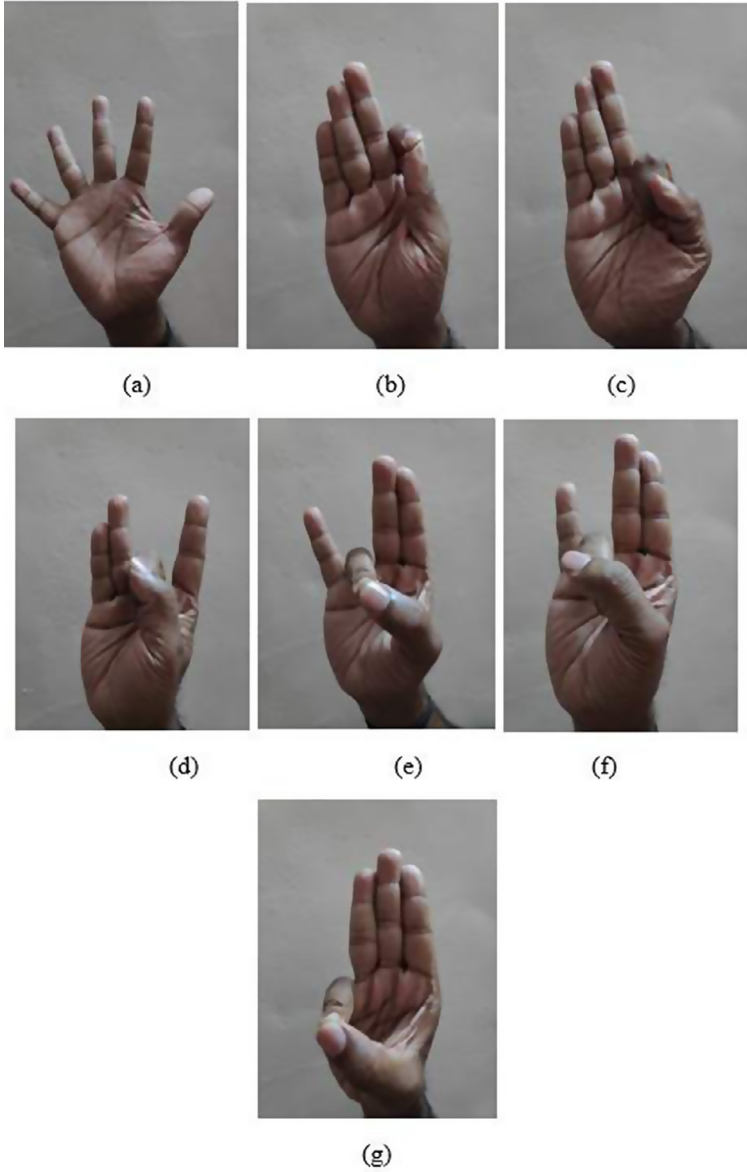


Fig. 2 Yoga mudras for health care—Stage 1.

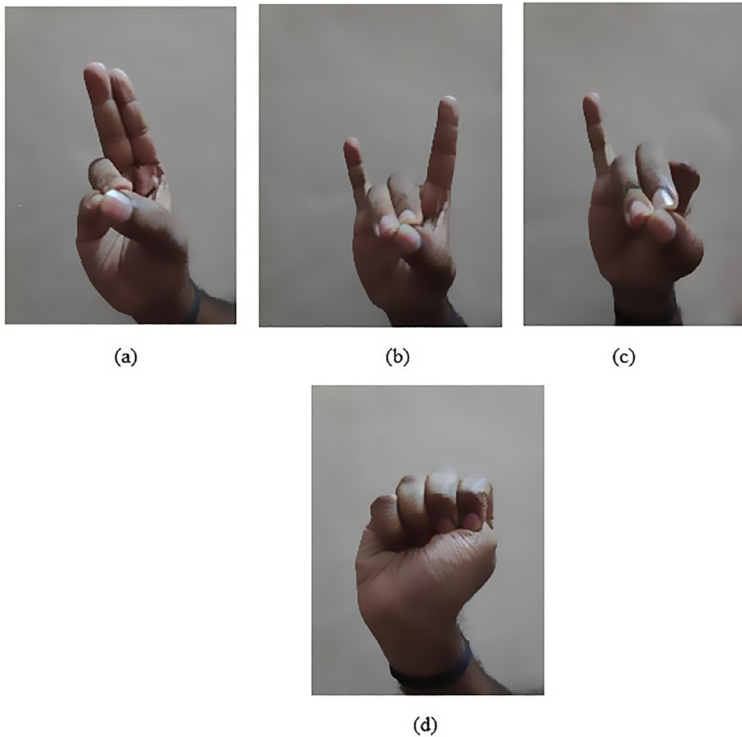


Fig. 3 Yoga mudras for health care—Stage 2.

Merits: Relieves the knee and joint pain, relief in the case of spastic paralysis and Parkinson’s disease, alleviates the gas problems in the stomach.

2.1.3 *Varuna mudra*

It is associated with the water element in the body. It improves blood circulation in the body. This mudra is beneficial for dry mouth, dry eyes, dry skin, and dry hair, as well as a loss of taste and other tongue disorders.

Procedure: The steps in doing the varuna mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The hands are placed in the knees facing upward, the tip of the thumb finger touches the tip of the little finger, and the other fingers are kept straight. Slight pressure is applied at the tip and the varuna mudra is depicted in Fig. 2G.

Merits: Cures skin problems, continuous practice of this mudra aids in the maintenance of cholesterol levels in the body.

2.1.4 *Surya mudra*

It is associated with the heat element in the body. It aids in the dissolving of extra fat and helps to control obesity. This mudra improves metabolism, promoting, weight loss, helps in treating the flu, strengthen the eyes and improves vision.

Procedure: The steps in doing the varuna mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The hands are placed in the knees facing upward, the tip of the thumb finger touches the middle of the ring finger, and the other fingers are kept straight. Slight pressure is applied at the tip and the surya mudra is depicted in [Fig. 2F](#).

Merits: It lowers the high LDL cholesterol, minimizes stress and tension, advances metabolic activities in the body, and improves the functioning of the thyroid gland. Hypothyroidism causes obesity, which in turn affects the functioning of the heart.

2.1.5 *Prithvi mudra*

It is associated with the earth element and has its link with the mooladhara chakra. This mudra is done along with the mediation and is associated with a positive impact on the skin, hair, and bones of the body.

Procedure: The steps in doing the prithvi mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The hands are placed in the knees facing upward, the tip of the thumb finger touches the tip of the ring finger, and the other fingers are kept straight. Slight pressure is applied at the tip and the prithvi mudra is depicted in [Fig. 2E](#).

Merits: It is efficient for improving stamina, good for chronic fatigue and Osteoarthritis.

2.1.6 *Shunya mudra*

It is a simple yoga gesture designed to decrease the space element (akasha) in the body. It can be practiced while seated standing or even walking, as long as the body is relaxed and the posture is symmetrical.

Procedure: The steps in doing the shunya mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The hands are placed in the knees facing upward, the tip of the thumb finger touches the middle finger, and the other fingers are kept straight. Slight pressure is applied at the tip and the shunya mudra is depicted in [Fig. 2D](#).

Merits: Cures ear diseases, strengthens muscles, well for the functioning of heart and thyroid gland.

2.1.7 Apana mudra

Human health and wellness are dependent on the rapid removal of systemic waste before it turns toxic. It is also called the mudra of digestion and plays a vital role in the regulation of the excretory system.

Procedure: The steps in doing the shunya mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The hands are placed in the knees facing upward, the tip of the thumb finger touches the middle finger, and the other fingers are kept straight. Slight pressure is applied at the tip and the apana mudra is depicted in [Fig. 3B](#).

Merits: It regulates diabetes and aids in curing menstrual problems, eliminates the disease related to indigestion such as constipation, piles, vomiting, etc. Good for heart ailments and can be used by those complaining of chest pain due to cardiac malfunction. Useful for pregnant ladies during the 9th month or delayed delivery; it can help in smooth and easy childbirth.

2.2 Mudras and breathing exercise for improving immunity

The mudras and breathing exercise for improving immunity is as follows. [Fig. 4](#) depicts the yoga mudras.

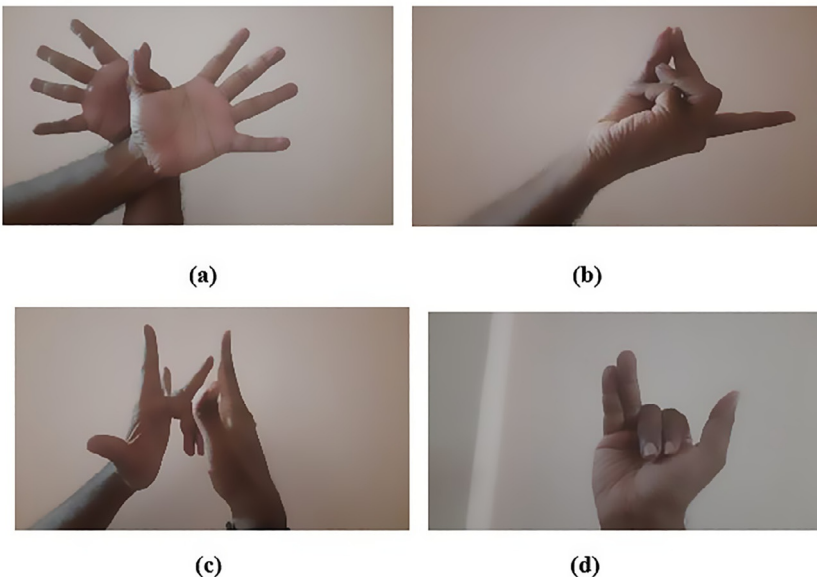


Fig. 4 Yoga mudras for health care—Stage 3.

2.2.1 *Apana vayu mudra*

It is also called mudra of the heart and can be used as a first-aid remedy during a heart attack. It increases the earth element and the fire element decreases the air element in the body. Cleans the body and supplies oxygen to the heart.

Procedure: The steps in doing the apana vayu mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. Touch the tip of the thumb with the tips of middle and ring fingers on both hands. Fold the index finger inward so that its tip touches the base of the thumb on both hands. The little finger is stretched outward. It is depicted in [Fig. 3C](#).

Merits: Cures headache, toothache, backache, neck pain, joint pain, digestion problems, and arthritis. Effective for respiratory diseases, it also improves the functioning of the lungs.

2.2.2 *Prana mudra*

It is also called mudra of vitality. This mudra stimulates the mooladhara or root chakra. It increases the level of earth element, water element and minimizes the fire element.

Procedure: The steps in doing the prana mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The tip of the thumb is touched with the ring and the little finger. Slight pressure is applied and the index, the middle finger is stretched out. It is depicted in [Fig. 3A](#).

Merits: Helps in the proper working of the lungs, rejuvenates the heart, and minimizes vitamin deficiency and chronic fatigue. Improves blood circulation and alleviates joint pain, mental tension, and stress.

2.2.3 *Adhi mudra*

This mudra is also called a baby's gesture and is also known as primordial mudra. It is the simplest mudra and the Sanskrit term "Adi" means the first. It had got its name by the hand posture of the fetus inside the mother's womb. It focuses on the breathing pattern and can be practiced with asanas.

Procedure: The steps in doing the shunya mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The adhi mudra pose is depicted in [Fig. 3D](#). The hands are placed in thighs with all the fingers closed in such a manner that, thumb is closed first and above which the four fingers are placed.

Merits: Increase the breathing capacity of lungs, enhance the oxygen flow in the body, stimulates the brain, calms the nervous system, enhance the oxygen flow in the body.

2.2.4 Garuda mudra

This mudra is also called as eagle pose. It is followed during mediation and pranayama, hence called garuda mudra pranayama.

Procedure: The steps in doing the shunya mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. Both the thumb are interlocked and the remaining fingers in two hands are stretched out as depicted in Fig. 4A. The thumb represents the fire element in the body, hence this mudra stimulates the fire element and heats the body. This mudra is done at three positions with palms facing us; the lower part of the abdomen, near the navel and above the navel.

Merits: It is practiced in three different regions as stated earlier, hence it improves the functioning of the kidney, lungs, heart, and stomach. Cures respiratory problems and regulates the blood circulation of the body.

2.2.5 Asthma mudra

This mudra is practiced with both hands. The middle fingers of the two hands should be in contact, the nails also should touch each other.

Procedure: The steps in doing the asthma mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose Stretch out the fingers of both hands and the middle fingers of two hands are bent inward and are depicted in Fig. 4C. The remaining fingers are stretched out as depicted in the figure.

Merits: Relaxes bronchial tubes and clears bad toxins and blockages. Good for asthma patients, since it eases the muscles that line the respiratory tract.

2.2.6 Aswini mudra

This mudra is also known as horse gesture. This mudra directs the prana (life energy) upward along the spine through the sushmna nadi. This mudra focuses on the Muladhara or the root chakra. This mudra should be practiced in a relaxed manner and should not create any redundant tension on other parts of the human body.

Procedure: The steps in doing the asthma mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose, *salamba sarvangasana* (supported shoulder stand) with the knees bent and dropped forward. Relax in chin mudra for 5 min. Take a breath and exhale three times. While inhaling, upright the mouth of anus by feelings and try to keep it for 5 min. While exhaling, relax and contract.

Merits: Expansion and contraction of anus make chakras in our body function in an efficient manner. Wastage in our body will be removed.

2.2.7 Bronchial mudra

This mudra is practiced with four fingers and plays a vital role in minimizing respiratory problems. Bronchial are pipes that transport air through the windpipes at the throat to the lungs in our body. The pipes when diseased, with exposure to irritable substances, cause Bronchitis. This mudra should be avoided by pregnant women.

Procedure: The steps in doing the bronchial mudra are as follows; sit in a comfortable position, padmasana or vajrasana is the best pose. The little finger is placed at the root of the thumb, pressing while curling it inward, the ring finger is positioned on the upper thumb joint, pressing toward the thumb, while curling the finger, then place the middle finger on the tip, of the thumb, pressing against each other, while the index finger is stretch out and is depicted in [Fig. 4B](#).

Merits: Improves breathing, increases the oxygen flow in the body, the function of the lung is enhanced.

2.2.8 Nadi Shuddi pranayama

The human body consists of 72,000 veins. The Nadi Shuddi is a breathing exercise that energizes the veins in the body can be cleaned through our breath. It removes all the dust blocked in our lungs, nostrils, also removes mucous leading to the good functioning of the lungs. The left hand is positioned in chin mudra and the right hand in nasika mudra. It is also called as the anulom-vilom pranayam (alternate nostril pranayam). The nasika mudra pose is as follows; index finger and middle finger is bent, while the remaining fingers are stretched out as depicted in [Fig. 4D](#).

Procedure:

- Sit in Suhasana or Vajrasana or Artha padmasana or Padmasana or Virasana according to one's convenience.
- Press the thumb down on the right nostril and exhale quietly through the left nostril.
- Now inhale from the left nostril and then press the left nostril gently with the ring finger and little finger. Remove the right thumb from the right nostril, exhale from the right.
- Inhale from the right nostril and exhale from the left. The above one is the complete round of Nadi Shodhan pranayama. Continue inhaling and exhaling from alternate nostrils.

Merits: Enhances lung capacity and induces balance in the digestive, nervous, respiratory, cardiovascular systems. The immunity of the body is improved and nerves are purified.



3 Proposed yoga health package model

This research work proposes a health package model that can be followed by every person for improving immunity. The practice of mudras and breathing exercise ensures good physical and mental health. This yoga health package model has to be done before food, preferably after the daily morning routine (nature call). The yoga health package model is depicted in table. The mudras and breathing exercise while practicing in the evening should be before taking food and after a minimum duration of an hour if tea/coffee had been taken. Each mudra can be practiced for a minimum duration of 5 min and a maximum of 20 min. In this proposed health package system, the mudras are grouped into two sections as depicted below in [Table 1](#).

The health package system is depicted in figure, a total of 30 min duration have to be devoted for enhancing the immunity of body during morning and evening session. This system can be practiced by children from the age of 10 to persons above the age of 70. [Fig. 5](#) depicts the proposed yoga health package system.

The Nadi Shuddi pranayama and aswini mudras were incorporated in morning and evening session yoga practice. The seven mudras and a pranayama exercise were considered in this work, the seven mudras are grouped into two sessions based on their effects in improving health. The features of each mudra are detailed in [Section 2](#). A daily practice of this system improves the immunity of the body and ensures physical and mental health thereby resisting the pandemic disease COVID-19.

Table 1 Yoga health package system.

Morning session	Duration (min)	Evening session	Duration (min)
Nadi Shuddi Pranayama	10	Nadi Shuddi Pranayama	10
Prana mudra	5	Apana vayu mudra	5
Garuda mudra	5	Asthma mudra	5
Bronchial mudra	5	Adhi mudra	5
Aswini mudra	5	Aswini mudra	5

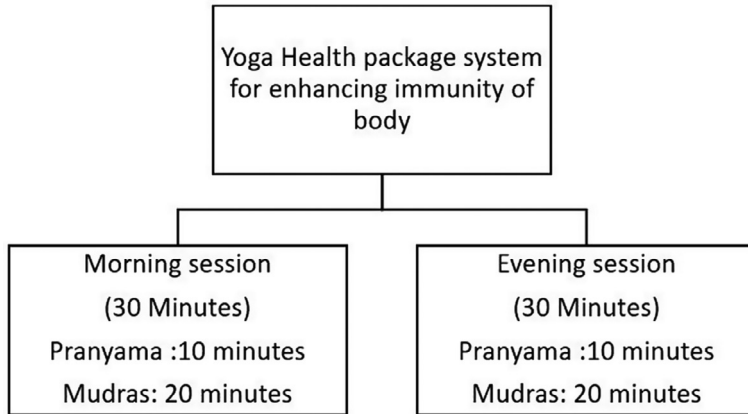


Fig. 5 Yoga health package system for enhancing the immunity of the body.

4 Results and discussion

A set of questionnaire was framed and the survey response was collected. The target audience comprises of population with age criteria from 20 to 60. Out of 24 questions in the Google form, the first four questions was related to personal information. The response was collected through social media apps. The questionnaire was framed through the discussion with experts in yoga and focus group comprises of people who are aware and not aware of yoga principles. A total of 200 participants involved in the survey and the summary of response is also represented here. The questionnaire was highlighted in the [Appendix](#) section. The responses are analyzed using pie chart (circular statistical graphical chart) and bar chart, the response with maximum voting by the respondents was taken into account from the survey results.

The response of the questions is analyzed, and the inferences are as follows:

- (i) Q1, Q2, and Q3. The 51.1% of the respondents are male and 48.9% are female
- (ii) Q4. Many respondents were not ready to share their health problems, however the following response were obtained
- (iii) Q5. The 57.4% respondents reported to have stress
- (iv) Q6. With respect to the source of stress, the results are depicted in [Fig. 6](#)

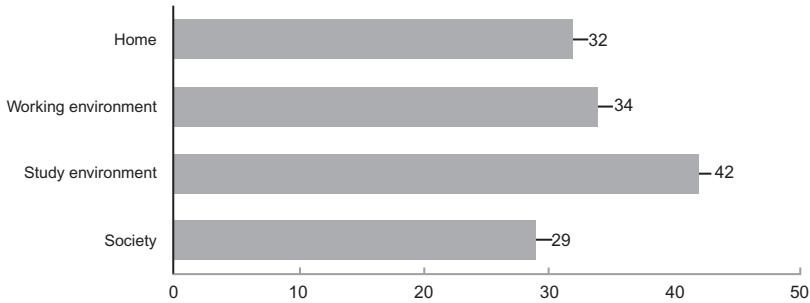


Fig. 6 Source of stress.

- (v) Q7. The 31.9% strongly agrees and 44% agrees with the statement that practicing yoga will minimize the stress, the rest 20.6% has neutral response.
- (vi) Q8. The preferences in learning yoga principles are depicted below in Fig. 7
- (vii) Q9. The 75.9% of target population was aware of pranayama and 24.1% was not aware of pranayama
- (viii) Q10. The 21.4% of target population practice pranayama daily, while 78.6% occasionally practice pranayama
- (ix) Q11. The 73% of the target population was interested in practicing mudras, while 24% of the target population was not interested in practicing mudras
- (x) Q12. The 69.5% of the target population are ready to do yoga practice for 20 min, while the 24.1% of the target population choose 30 min, the rest were ready to spend 1 h
- (xi) Q13. The 27.5% of the population often gets angry, the 65.5% of the population occasionally gets angry, while the 7% never gets angry

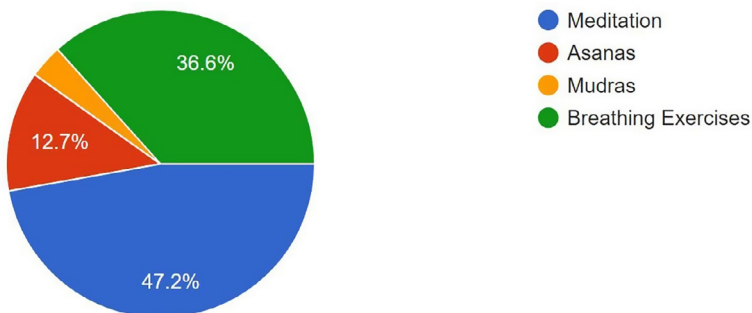


Fig. 7 Pie chart depicting the principles of yoga preferences.

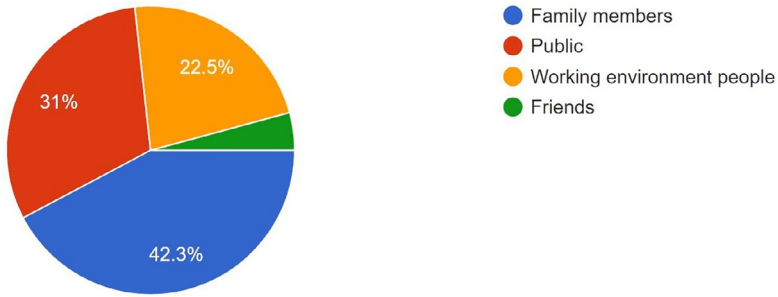


Fig. 8 Response indicating source of provoking a person.

- (xii) Q14. The response is depicted below in Fig. 8
- (xiii) Q15. The 87.3% of the population was interested in improving immunity to resist COVID-19 through yoga practices
- (xiv) Q16. The 85.2% of the population was interested in learning yoga practices
- (xv) Q17. The preference in learning yoga practices are depicted below in Fig. 9
- (xvi) Q18. The 83.1% of population shows agreement toward the learning of 30 min health package comprising of mudras and pranayama
- (xvii) Q19. The 56.3% of population prefer offline technique in learning yoga practices
- (xviii) Q20. The 14.8% of population prefer vegetarian food, while 17.6% of population prefer non vegetarian food, the rest prefer veg/non veg
- (xix) Q21. The 90.8% of population are interested in taking a balance diet

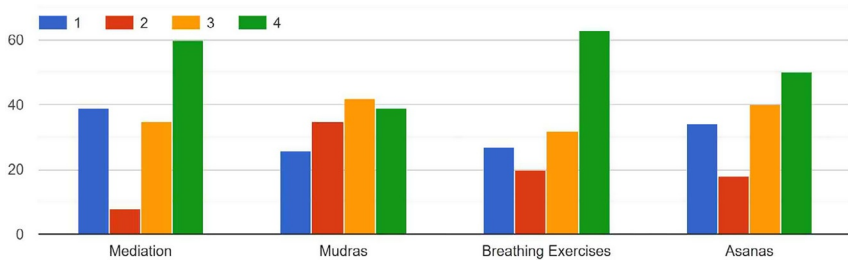


Fig. 9 Preferences in learning yoga practices.

- (xx) Q22. The 69% of population are taking medicine to improve immunity
- (xxi) Q23. The 52.8% of population are vaccinated for resisting COVID-19 disease

4.1 Implications of the study

The vital implications of the proposed study are highlighted as follows; more than 50% of the respondents are reported to have stress, the stress source of maximum value 42.9% belongs to study environment and the next maximum source of stress value is 34.7% that belongs to working environment. Out of 200 respondents, it was observed that 31.9% strongly agrees and 44% agrees that practicing yoga will minimize the stress. Among the different yoga practices like meditation, asana, breathing exercises, and mudra, the maximum voting preference is for practicing meditation (47.5%). The second maximum voting preference is for practicing breathing exercises. The proposed research work was focused mainly on pranayama and mudra practice, the survey results reveals that 75.9% of the respondents were aware of pranayama, out of which 21.4% of the people practice pranayama regularly. The 73% of the respondents were found to be interested in practicing mudras. This research work proposes a 30 min health package for improving the immunity of the body, the response survey shows that 83.1% of the respondents are willing to take 30 min daily yoga practice.

It was evident from the previous research works (Tillu et al., 2020; Venkatesh et al., 2020) that yoga practices has significant role in improving the immunity of body especially in this current COVID-19 (Bushell et al., 2020) pandemic scenario. By having a balanced diet and proper exercise, the body will be healthy and proper yoga practices will improve the immunity of the body.



5 Conclusion

This chapter focuses on some typical yoga mudras and Nadi Shuddi pranayama for improving the immunity of the body. In this current pandemic COVID-19 scenario, many are subjected to disease because of poor immunity. The vaccination and medicines are there for improving immunity; however, this chapter focuses on the yoga practices that help to resist disease. The scientific benefits of yoga practices were already proved and this work proposes a health package for 30 min in the morning and evening. In the health package, the Nadi Shuddi pranayama and aswini mudra were common for

both sessions and the remaining mudras are grouped in such a manner that the total duration is 30 min. The survey results indicate that 83.1% of the focus group shows agreement toward the learning of 30 min health package. Prevention is better than cure, and the outcome of this research work paves a way toward improving the immunity for the welfare of society.



Appendix

The questionnaire is represented below.

- Q1.** Name:
- Q2.** Age
- Q3.** Gender: a. Male, b. Female
- Q4.** Do you have any health problems?
 - a. Headache, b. Breathing problem, c. Sinus, d. Joint pains, e. Others
- Q5.** Do you have stress
 - a. Yes, b. No
- Q6.** If you have stress, can you please tick the source of stress
 - a. Home, b. Working environment, c. Study environment, d. Society
- Q7.** Do you think Yoga practices had significant role in Health care?
 - a. Strongly disagree, b. Disagree, c. Neutral, d. Agree, e. Strongly Agree
- Q8.** What type of yoga practices do you prefer?
 - a. Meditation, b. Asana, c. Mudras, d. Breathing exercises
- Q9.** Are you aware of pranayama?
 - a. Yes, b. No
- Q10.** If you are practicing pranayama, please indicate your choice?
 - a. Daily, b. Occasionally
- Q11.** Are you interested in practicing mudras done by hand for improving health care?
 - a. Yes, b. No
- Q12.** How much time you can devote for practicing yoga daily to improve your physical and mental health?
 - a. 20 minutes, b. 30 minutes, c. 1 hour
- Q13.** How often do you get angry?
 - a. Often, b. Occasionally, c. Never
- Q14.** Who will be troubling you in your daily routine there by making you angry?
 - a. Family members, b. Public, c. Working environment, d. Friends

- Q15.** Are you interested in improving immunity of your body to resist COVID-19 through yoga practices?
a. Yes, b. No
- Q16.** Are you interested in learning yoga practices?
a. Yes, b. No
- Q17.** Indicate your preference in learning the following practices?
1. Meditation, 2. Mudras, 3. Breathing exercises, 4. Asana
- Q18.** If a health package of 30 min morning and evening comprising of pranayama and mudras with simple mediation is suggested, are you interested in adopting that for improving your health?
a. Yes, b. No
- Q19.** Which mode of training you prefer for yoga practices?
a. Online, b. Offline
- Q20.** Indicate your food preference
a. Vegetarian, b. Non Vegetarian, c. Veg/Non Vegetarian
- Q21.** Are you interested in following a balance diet to improve your health?
a. Yes, b. No
- Q22.** Are you taking any medicine to improve your immunity?
a. Yes, b. No
- Q23.** For improving immunity, which one you follow?
a. Allopathy, b. Ayurveda, c. Homeopathy
- Q24.** Are you vaccinated to resist COVID-19?
a. Yes, b. No

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References

- Akhtar, P., Yardi, S., Akhtar, M., 2013. Effects of yoga on functional capacity and well being. *Int. J. Yoga* 6 (1), 76.
- Basu-Ray, I., et al., 2021. A mechanistic model for yoga as a preventive and therapeutic modality. *Int. J. Yoga* 14 (2), 152.
- Bir, S., 2016. *Principles and Practice of Yoga in Health Care*. Handspring Publishing Limited.
- Birdee, G.S., et al., 2009. Clinical applications of yoga for the pediatric population: a systematic review. *Acad. Pediatr.* 9 (4), 212–220. <https://doi.org/10.1016/j.acap.2009.04.002>.
- Bushell, W., et al., 2020. Meditation and yoga practices as potential adjunctive treatment of SARS-CoV-2 infection and COVID-19: a brief overview of key subjects. *J. Altern. Complement. Med.* 26 (7), 547–556. <https://doi.org/10.1089/acm.2020.0177>.

- Dhaniwala, N.K.S., Dasari, V., Dhaniwala, M.N., 2020. Pranayama and breathing exercises – types and its role in disease prevention & rehabilitation. *J. Evol. Med. Dent. Sci.* 9 (44), 3325–3330. <https://doi.org/10.14260/jemds/2020/730>.
- Gordon, L.A., et al., 2008. Effect of exercise therapy on lipid profile and oxidative stress indicators in patients with type 2 diabetes. *BMC Complement. Altern. Med.* 8, 1–10. <https://doi.org/10.1186/1472-6882-8-21>.
- Innes, K.E., Vincent, H.K., 2007. The influence of yoga-based programs on risk profiles in adults with type 2 diabetes mellitus: a systematic review. *Evid. Based Complement. Alternat. Med.* 4 (4), 469–486. <https://doi.org/10.1093/ecam/nel103>.
- Kern, L., 2012. Connecting embodiment, emotion and gentrification: an exploration through the practice of yoga in Toronto. *Emot. Space Soc.* 5 (1), 27–35. <https://doi.org/10.1016/j.emospa.2011.01.003>.
- Kinabalu, K., 2005. Immediate effect of ‘nadi-shodhana pranayama’ on some selected parameters of cardiovascular, pulmonary, and higher functions of brain. *Thai J. Physiol. Sci.* 18 (2), 10–16.
- Namratha, H.G., et al., 2017. Effect of yoga and working memory training on cognitive communicative abilities among middle aged adults. *Complement. Ther. Clin. Pract.* 28, 92–100. <https://doi.org/10.1016/j.ctcp.2017.05.007>.
- Novaes, M.M., et al., 2020. Effects of yoga respiratory practice (Bhastrika pranayama) on anxiety, affect, and brain functional connectivity and activity: a randomized controlled trial. *Front. Psych.* 11 (May), 1–13. <https://doi.org/10.3389/fpsy.2020.00467>.
- Ramos-Jimenez, A., et al., 2009. Cardiovascular and metabolic effects of intensive Hatha Yoga training in middle-aged and older women from northern Mexico. *Int. J. Yoga* 2 (2), 49. <https://doi.org/10.4103/0973-6131.60044>.
- Rao, R.M., et al., 2017. Effect of yoga on sleep quality and neuroendocrine immune response in metastatic breast cancer patients. *Indian J. Palliat. Care* 23 (3), 253–260. https://doi.org/10.4103/IJPC.IJPC_102_17.
- Raub, J.A., 2002. Psychophysiological effects of Hatha Yoga on musculoskeletal and cardio-pulmonary function: a literature review. *J. Altern. Complement. Med.* 8 (6), 797–812. <https://doi.org/10.1089/10755530260511810>.
- Saravanan, P.S.L., et al., 2019. Lung-specific yoga mudras on respiratory function in asthma patients. *Natl. J. Physiol. Pharm. Pharm.* 9 (9), 878–883.
- Sayeed, S.A., Prakash, A., 2013. The Islamic prayer (Salah>Namaaz) and yoga togetherness in mental health. *Indian J. Psychiatry* 55 (Spec. suppl), 19–23. <https://doi.org/10.4103/0019-5545.105537>.
- Shankarappa, V., et al., 2012. The short term effect of pranayama on the lung parameters. *J. Clin. Diagn. Res.* 6 (1), 27–30.
- Shree, N., Bhonde, R.R., 2016. Can yoga therapy stimulate stem cell trafficking from bone marrow? *J. Ayurveda Integr. Med.* 7 (3), 181–184. <https://doi.org/10.1016/j.jaim.2016.07.003>.
- Tillu, G., et al., 2020. Public health approach of ayurveda and yoga for COVID-19 prophylaxis. *J. Altern. Complement. Med.* 26 (5), 360–364. <https://doi.org/10.1089/acm.2020.0129>.
- Venkatesh, H., et al., 2020. Molecular signature of the immune response to yoga therapy in stress-related chronic disease conditions: an insight. *Int. J. Yoga* 13 (1), 9. https://doi.org/10.4103/ijoy.ijoy_82_18.
- Yang, K., 2007. A review of yoga programs for four leading risk factors of chronic diseases. *Evid. Based Complement. Alternat. Med.* 4 (4), 487–491. <https://doi.org/10.1093/ecam/nem154>.