

Fight against COVID-19: Survey of Spices & Herbs Used in North India

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Abstract

Treatments for the ongoing COVID-19 global pandemic continue to be researched. Clinical trials with antivirals or immunomodulators have met with variable success. Traditional herbal remedies for health problems are popular for prevention and treatment of ailments especially in low resource countries. It is notable that morbidity and mortality from COVID were lower in low resource countries compared to the west. Other factors attributed to this difference include ethnicity, temperature, humidity, innate immunity, and nutrition. **Objective:** To identify the traditional herbs used for protection against COVID, in north India. **Method:** This questionnaire-based survey was conducted from August to September 2020 at five districts in North India. Participation in the brief interview was voluntary. Responses were recorded in a predesigned questionnaire (Annexure). Descriptive data analysis was done. **Results:** A total of 250 people participated in the interview. Majority (84.4%) of the respondents used mask. A total of 66.8% of the respondents confirmed using traditional herbs and spices. Most frequently used home remedies were decoction of herbs including ginger, *Tinospora cordifolia*, turmeric, black pepper, carom seeds. Turmeric milk was also popular choice. COVID positivity was present in family members of 4% (n = 10) of the respondents, of these four did not consume any herbs. **Conclusions:** This study provides an overview on the use of home remedies in North India. Given the scarcity of reliable information on home remedies and traditional medicines, further research is needed to develop robust evidence for their role in disease prevention and treatment.

Keywords

Home Remedies, Kadha, Traditional Medicine, COVID, Corona, Spices, Herbs, Minor Health Ailments

1. Background

Treatments for the ongoing Corona virus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2) global pandemic continue to be researched. Clinical trials with antivirals or immunomodulators have met with variable success. Despite the ongoing containment efforts, the pandemic is continuing to spread for want of an effective prophylaxis and treatment. There is an urgent requirement to collate the knowledge available in the variety of systems of Medicine being practiced. Traditional herbal remedies are passed down through generations only by word of mouth. There may not be robust scientific evidence available for their use though they are time tested. Traditional Chinese Medicine (TCM) was officially included in the Chinese Guideline on diagnosis and treatment of COVID-19 [1]. The results demonstrate that traditional health care can contribute to treatment and prevention of the disease. Recently, guidelines have also been issued by Ministry of AYUSH, Government of India for boosting immunity among the masses [2]. Morbidity and mortality from COVID are notably lower in low resource countries compared to the west. Innate immunity, ethnicity and nutrition have been attributed to this difference. This study aims to provide information on the use of traditional spices & herbs as protection against COVID, in north India during the pandemic.

2. Method

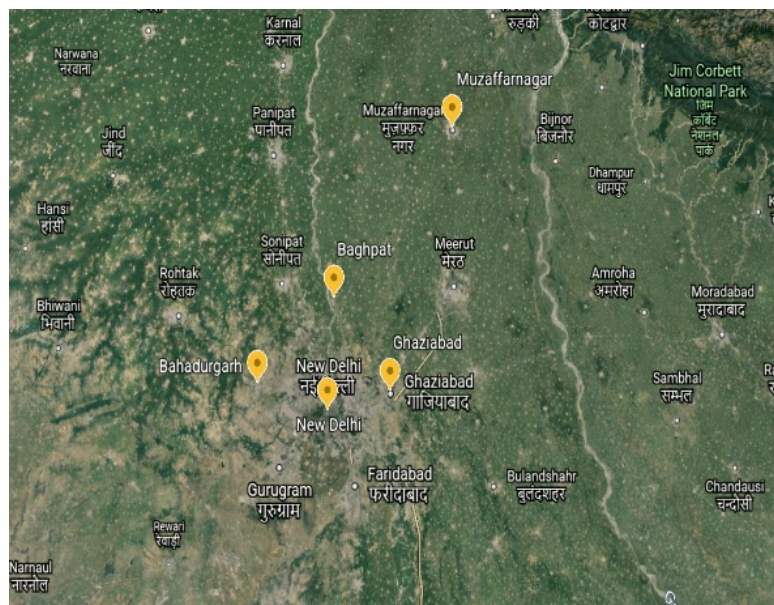
We conducted a cross-sectional study of individuals at five districts in North India, namely, Delhi (urban), Uttar Pradesh (urban) & (rural) (Table 1, Map 1) from August to September 2020. Participation in the survey was voluntary. While GTB hospital campus was selected in Delhi, the interview was community based in rest of the areas. Individuals in the hospital campus included relatives of patients, hospital employees including doctors, nurses and paramedical workers. Participants from other areas included neighbours, shopkeepers and labourers. They were explained about the study and invited to participate on voluntary basis.

A brief questionnaire was designed based on available knowledge about the prevailing practices about the use of home prevention, complementary and alternative medicine, the same was designed, pretested, and then used for survey. The questionnaire was designed based on a brief piloting of current preventive measures and home remedies in use.

Demographic details and traditional practices using herbs and spices being used as a preventive measure were recorded. Each interview session lasted for 3 - 5 minutes only.

Data

Questionnaires were reviewed for completeness. Descriptive statistics using STATA 12 was applied [3].



Map 1. Showing location of study sites.

Table 1. Area-wise distribution of participants.

	Area	Number interviewed
1	Campus, Guru Teg Bahadur Hospital, Delhi. (Health care workers, Attendants of admitted patients, Residents of campus)	106
2	Muzaffarnagar, UP	61
3	Baghpat, UP	53
4	Ghaziabad, UP	24
5	Bahadurgarh, Haryana	6

3. Results

A total of 250 people were approached, all of them agreed to participate in the interview *i.e.*, the participation was 100%. Details are shown in **Table 2**. Commonly used spices and herbs used are detailed in **Table 3**. Some form of precaution including social distancing *i.e.* face mask, sanitizer, herbs & spices was used by 97.6% of respondents. Majority (86.8%) of the respondents used mask either as a sole protection or in combination with other measures (**Table 4**). Home-made herbal decoction and chewing of raw spices included combination of spices and herbs detailed in **Table 4**. While 46% and 40% of respondents preferred spices for chewing and respectively, 1.6% used both. Turmeric milk (10%)

Table 2. Profile of respondents.

Occupation	Number (%) n = 250
Government Job, writer, Student, private job	150 (60%)
Housewife	50 (20%)
Healthcare worker	20 (8%)
Doctor (allopath, homeopath, Unani)	20 (8%)
Others (Sweeper, security guard, postman)	10 (4%)
Gender	
Male	131 (52.4%)
Female	119 (47.6%)
Age	
<15	3 (1.2%)
15 - 30	88 (35.2%)
30 - 45	93 (37.2%)
45 - 60	50 (20%)
60 above	16 (6.4%)

Table 3. Details of herbs and spices used.

Spice	Botanical name
Cardamom	<i>Elettaria cardamomum</i>
Clove	<i>Syzygium aromaticum</i>
Pepper	<i>Piper nigrum</i>
Ginger	<i>Zingiber officinale</i>
Holy Basil	<i>Ocimum tenuiflorum</i>
Turmeric	<i>Curcuma longa</i>
Carom seeds	<i>Trachyspermum ammi</i>
Heart-leaved moonseed (syn Giloy, Gudduchi)	<i>Tinospora cordifolia</i>

was also popular. Frequent intake of warm water, alcohol consumption, multivitamins, paracetamol, C, yoga and fruit juice only without mask or was also considered a preventive measure by 5.2% while 2.4% did not use any type of precautions. Age did not have any effect on precautions used. Frequency of use of herbal and spices varied from occasional to three times a day. Ten (4%) respondents had one or more members who tested COVID positive. Household preventive practices in these families are listed in **Table 5** indicates that all were using more than one type of precaution. On analysis of use of preventive measures, area-wise, there was statistically significant difference with respect to use of mask or combination of mask, and herbal combinations (**Table 6**).

Table 4. Precautions used by respondents.

Preferred Practice	Total = 250 N (%)
Mask only	50 (20%)
Mask & Kadha/spices	67 (26.8%)
Mask & sanitiser	40 (16%)
Mask & sanitiser & Kadha/spices	60 (24%)
Consumption of Alcohol, multivitamins, paracetamol, Vit C, yoga and fruit juice	13 (5.20%)
Sanitizer & Kadha/spices	9 (3.60%)
None	6 (2.40%)
Sanitizer only	5 (2%)

Table 5. Practices in households with at least one family member COVID positive.

Precaution used	Any COVID positive family member N = 10
Mask & kadha/spices	2
Mask & sanitizer	2
Mask & sanitizer & kadha/spices	6

Table 6. Area-wise details of precautions adapted by respondents.

	Bagpat Up N = 53 N (%)	Bahadurgarh Haryana N = 6 N (%)	GTB Delhi N = 106 N (%)	Ghaziabad UP N = 24 N (%)	Muzaffarnagar UP N = 61 N (%)	P-Value
Mask only	16 (30.19)	0 (0.00)	30 (28.30)	1 (4.17)	3 (4.92)	0.000
Mask & herbs	27 (50.94)	0 (0.00)	24 (22.64)	7 (29.17)	9 (14.75)	0.000
Mask & sanitiser	1 (1.89)	4 (66.67)	17 (16.04)	4 (16.67)	14 (22.95)	0.000
Mask & sanitiser & herbs	3 (5.66)	1 (16.67)	31 (29.25)	5 (20.83)	20 (32.79)	0.007
Consumption of Alcohol, multivitamins, paracetamol, Vit C, yoga and fruit juice	0 (0.00)	1 (16.67)	1 (0.94)	7 (29.17)	4 (6.56)	0.000

Continued

Sanitizer with home remedies	1 (1.89)	0 (0.00)	3 (2.83)	0 (0.00)	5 (8.20)	0.243
None	4 (7.55)	0 (0.00)	0 (0.00)	0 (0.00)	2 (3.28)	0.049
Sanitizer only	1 (1.89)	0 (0.00)	0 (0.00)	0 (0.00)	4 (6.56)	0.055

Distribution of Type Precaution with area is highly significant ($P = 0.000$) which less than 0.05. That is means place is affect the type of precaution.

4. Discussion

Clarity regarding SARS-CoV-2 infection is still lacking though few factors have become evident regarding its transmission. The average time from exposure to symptoms (fever, dry cough, shortness of breath) onset is about 5 days, and majority (97.5%) of people who develop symptoms do so within 11.5 days [4]. About 5% of patients with COVID-19 need hospitalization, and 20% of those hospitalized, require intensive care—fulminant disease characterized by sepsis and acute respiratory failure is a manifestation of severe disease. More than 75% of hospitalized patients require supplemental oxygen [5].

While most developed countries documented a fast spread of the disease, India & South Asian subcontinent seemed to have a slower trajectory in the 1st phase [6] [7]. In India, the total recoveries have crossed 1.8 million with a recovery rate of more than 70% and average case fatality rate of 1.94% which is below the global average [8]. Variations in temperature, humidity [9], widespread use of BCG vaccination for prevention of tuberculosis in India [10], inherent immunity due to repeated respiratory infections, nutritional factors, tough life, unhygienic conditions, poor community hygiene [11] are considered as important factors for these differences.

Traditional home remedies are particularly popular in low- and middle-income countries. An estimated that 70% - 80% of the people in these countries are dependent on the herbal medications for their primary healthcare [12]. Approximately, twenty-five thousand plant-based formulations and extracts have been used in folk medication in the south Asian subcontinents [13]. Home remedies are practiced in families over generations resulting in their easy acceptance. Other possible reasons for their use include anxiety associated with visit to healthcare facility, poverty, occasionally lack of access to formal healthcare services. “Home-based treatment” is commonly reported response to a wide range of ailments, although very few studies have addressed this health seeking behaviour [14]. Herbal and traditional home remedies are also popular among people in other developing countries such as Ghana, Mali, Nigeria, and Zambia [15].

Ayurveda is an alternative medicine system with historical roots in the Indian subcontinent. Various herbs including *Allium sativum*, *Echinacea purpurea* (L.) Moench, *Glycyrrhiza glabra* L., *Sambucus nigra* L., and *Scutellaria baicalensis* Georgi, *Andrographis paniculata*, *Echinacea angustifolia*, *Echinacea purpurea*, *Eucalyptus globulus* essential oil, *Justicia pectoralis*, *Magnolia officinalis*, *Mikania glomerata*, *Pelargonium sidoides*, *Pimpinella anisum*, *Salix* sp., *Zingiber offi-*

cinale have been studied for their benefit in COVID infection [16].

Ministry of Ayurveda, Yoga, and Homeopathy (AYUSH), Government of India advocates drinking herbal tea or decoction (kadha) made from Basil, Cinnamon, Black pepper, Dry Ginger and Raisin with natural sugar and fresh lemon juice (optional). Consumption of “Golden Milk” which is turmeric powder in hot milk once or twice a day for boosting immunity and help fight against COVID illness. Use of herbs e.g. turmeric, carrom (*Trachyspermum ammi*) and Loban (resin of and *Boswellia* species) asymptomatic individuals for prevention and consumption of a combination of herbs has been advocated treatment of COVID [17]. Are considered to act as medicines or supplements, especially and are known to possess antioxidant, anti-inflammatory properties [18] [19].

Protective benefits of holy basil [20] and black pepper [21] in COVID-19 have also been elucidated.

In the context of respiratory conditions, *Zingiber officinale* is indicated for common cold and cough. In a randomized study, by 5th day, lower serum levels of inflammatory markers, IL-1, IL6, and TNFa, and raised RBC glutathione were found in patients with acute respiratory distress syndrome (ARDS) on enteral diet enriched with ginger when compared with those on placebo. Significant improvement in oxygenation was also observed in the ginger group [22].

Recent studies have documented the anti SARS-CoV-2 activity of *Tinospora cordifolia* [23] [24].

Turmeric, ginger, holy basil and *Tinospora cordifolia* (giloy) were present in almost all of the home remedies used by the respondents in this study.

Molecular docking and molecular dynamics simulation approach has been used by Maurya *et al.* to explore the beneficial roles of phytochemicals and active pharmacological agents present in the Indian herbs which are widely used in the preparation of Ayurvedic medicines *i.e.* Kadha to control upper respiratory infections. An array of phytochemicals has been found to have significant docking scores and potential to inhibit different stages of SARS-CoV-2 infection as well as significant anti-inflammatory property. The authors claim that study provides evidence of the binding of active ingredients present in different plants used in Kadha preparation with viral proteins and target proteins for prevention and treatment of the COVID-19 [25].

There is dearth of literature about home remedies. It is important to address the significant gap in the body of medical knowledge on the subject, given the popularity and acceptance by patients. Further scientific research in this area needs to be conducted.

This survey gives an initial overview on the use of home remedies in north India. Bearing in mind the high use of home remedies for symptom management of minor health complaints, it is important to provide reliable information to the healthcare professionals on the benefits and risks of these remedies to enable proper guidance to the patients. It has the added benefits in terms of supporting patients to take an active role in their health. However, modern clinical trials for robust evidence is lacking for home remedies. Many of the medicinal spices and

herbs are even used for everyday cooking in India. To revitalise self-care effectively, WHO recommends that beneficial lay/traditional self-care practices be integrated into alternative community-based self-care interventions [26] use of herbs.

The strength of the study is the focus on traditional locally available and acceptable strategies for prevention and possibly treatment of ailments. However, we do realize that the sample size is small and would recommend larger, multi-centric studies on the subject to identify the variation in practices and their benefits.

5. Conclusion

Home-based treatments, including self-care, self-medication, were found to be the first line of action for prevention of COVID in the urban-rural population studied in north India where the incidence of the disease was low. Role of traditional herbs and spices as immunity boosters needs to be investigated further.

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Conflicts of Interest

The authors do not have any conflict of interests to be declared.

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Annexure

Questionnaire for COVID-19 Precaution

1. Sr no _____

2. Area _____

3. Name _____

4. Age _____

5. Sex

1) M

2) F

6. Occupation _____

7. Precautions from COVID 19. (Multiple options)

- Mask
- Sanitizer
- Kadha
- HCQs
- Ayurvedic herbs
- Homeopathy
- Others (specify.....)

8. Frequency of Intake/Use

- 1) Daily
- 2) Twice a day
- 3) 3 - 4 times in a day
- 4) Twice a week
- 5) 3 - 4 times in a week
- 6) When go out
- 7) Nothing

9. Any positive case in family

- 1) No
- 2) Yes