

# Perspective Toward Complementary & Alternative Medicines in the Prevention of COVID-19 Infection

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## Abstract

**Background:** Across the globe, people are seeking integrative and holistic measures to prevent coronavirus (COVID-19) infection in the form of complementary and alternative medicines (CAM) with or without conventional medicines. This study was done to know the extent of CAM use for COVID-19 prophylaxis and to know beliefs and attitudes of people related to CAM use in India. **Methodology:** A pretested and prevalidated questionnaire was circulated on social media. Participants, who completed the online form and gave voluntary consent, were included. The questionnaire included demographic details and questions related to CAM use, preferences with reasons, preparations used, perceived role of CAM in prevention, immunity boosting and side effects, sources of information, etc. **Results:** Out of 514 responses, 495 were analyzed. 47.07% of respondents were males and 52.93% were females. 66.9% were using CAM for COVID-19 prophylaxis. The association between age, gender, and profession with CAM use was statistically significant ( $P < 0.05$ ). 41.1% reported CAM use in the past. 36.6% of CAM users were taking “Kadha” and 33% were using ayurvedic medicines. Other frequently used CAM preparations were *chyavanprash*, *giloy*, *tulsi*, ginger, pepper, cloves, honey, *sudarshanghanvati*, arsenic-30, lemon juice, cinnamon, steam inhalation, *ashwagandha*, *swasarivati*, *coronil*, and warm saline water gargles. 46.9% of the CAM users were on self-medication and 52.3% preferred CAM over allopathy. **Conclusion:** Complementary and alternative medicine utilization for COVID-19 prophylaxis is widespread and self-medication is prevalent. As no specific cure is available in conventional systems, people believe in traditional medicines more than conventional, yet confusion exists. There is a need of increasing awareness regarding side effects, drug–drug interactions, and self-medication.

**Keywords:** Complementary and alternative medicine, COVID-19, perspective toward CAM

## INTRODUCTION

The corona pandemic is unique in several aspects and has challenged the healthcare system all over the world. The conventional system is playing its role as a frontline system for the treatment of infection, yet no optimum treatment is available. Interim results of the solidarity trial have reported that all four treatments evaluated (remdesivir, hydroxychloroquine, lopinavir/ritonavir, and interferon) had very less or no effect on overall mortality and course of disease.<sup>[1]</sup>

Many pluralistic knowledge systems available globally are also trying to intervene through their knowledge base.<sup>[2]</sup> Ministry of AYUSH; Government of India has recommended self-care guidelines for preventive health measures and enhancing immunity with special reference to respiratory health.<sup>[3]</sup>

Across the globe, people are frightened by the present pandemic situation and are seeking measures for prophylaxis in the form of complementary and alternative medicine (CAM). One such report published by the National Center for Complementary and Integrative Health reveals that people are using alternative systems to prevent corona infection, though data has not been provided.<sup>[4]</sup>

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Though few studies have been published reporting the use of Chinese traditional medicine in the treatment of coronavirus (COVID-19) infection<sup>[5]</sup> and others have been published focusing on possible interventions by Indian traditional and pluralistic medicine systems,<sup>[2,6]</sup> information on the use of CAM and traditional medicines by the community for COVID-19 prophylaxis is limited. Thus, this study was planned to know the extent of the use of CAM for the prevention of COVID-19 infection as well as to know the beliefs and attitudes of people in India related to CAM keeping COVID-19 infection in focus.

## METHODOLOGY

### Study design

Cross-sectional Study

### Study setting and population

A study was conducted as an online survey through a web platform. This mode of the survey was chosen due to feasibility, ease to conduct, and cost-effectiveness, and it aids in the collection of diverse information efficiently irrespective of geographical boundaries posed due to the current pandemic condition. An online questionnaire was circulated through social media among general people of India who have access to the internet via “Google forms.” Wide dissemination of online forms was assured by sharing them on multiple social networking sites. A total of 514 responses were obtained.

### Inclusion and exclusion criteria

Participants with social media access, who completed the online form and gave voluntary consent to enroll in the study, were included while those who were less than 18 years of age and whose forms were found incomplete or invalid were excluded from the study.

### Study duration

The study was completed in eight weeks of duration from November to December 2020. Questionnaire designing, piloting, and planning were done in two weeks followed by four weeks for data collection through an online survey. Two weeks were dedicated to data analysis and report writing.

### Data collection

A pretested and prevalidated questionnaire was generated through Google Forms and its Uniform Resource Locator was circulated through social media and data was collected through a snowballing technique where the link was forwarded from one participant to the other to a large geographical area. Initially, the questionnaire was sent to the social networking sites frequented by general people of India and to the acquaintances of authors, who contributed as an initial sample. The questionnaire was sent with a note to forward it to friends, family members, and other acquaintances, and they contributed as the next level of sample. In this way, the questionnaire was forwarded from acquaintances of authors and people visiting social networking sites to their acquaintances and so on.

Possibility of bias could not be completely ruled out as it was initially also distributed to the acquaintances of authors and then forwarded to their acquaintances. A survey was conducted from November 15<sup>th</sup>, 2020 to December 15<sup>th</sup>, 2020. After that, the link was disabled and no more responses were recorded.

### Study tool

The questionnaire was a mix of closed, semiclosed, and open-ended questions, with the majority belonging to closed ended. Six questions were related to demographic details including age, gender, education, nationality, residential area, and profession of the participants. Fifteen questions were related to CAM use for COVID-19 prophylaxis and beliefs and attitudes of participants toward CAM. The details related to CAM were recorded like the preferences of CAM, the preparations used for ailments other than COVID-19 infection, perceived role in prevention or immunity-boosting, and the side effects experienced with CAM and conventional medication therapies. Only two questions were open-ended where participants were asked to name specific CAM preparation they have used for COVID-19 prevention and to name specific CAM medicine they believe could prevent COVID-19 infection. In questions related to “CAM therapy & conventional medicines they have been using for COVID-19 infection, reasons for using and preferring CAM and who advised for CAM”, semiclosed type of questions were framed to provide the participant an opportunity to write his/her answer if it does not belong to any of the given choices and belonged to “other” category.

The respondents were allowed to select multiple responses for the usage of various CAM therapies, allopathic medications, and reasons for using CAM therapy, and the data was analyzed accordingly.

The Institutional Human Research Ethics Committee approved this study (Date: 15.09.2020, Ref: GU/HREC/2020/819). Approval was obtained before the commencement of the study. Informed consent was obtained from study participants and anonymity was maintained at all stages of the study.

### Statistical analysis

Data was collected, compiled, and entered in Microsoft Excel software and analyzed using SPSS Version 24 (SPSS Inc, Chicago IL, USA). All the categorical variables were presented as frequencies and percentages, and test of significance like Chi-square test was used to assess the level of significance of variables and *P* value < 0.05 was considered statistically significant.

## RESULTS

A total of 514 responses were received out of which, 495 responses were analyzed after eliminating incomplete/invalid responses and responses from respondents below 18 years of age.

There were 233 (47.07%) male and 262 (52.93%) female respondents in the survey. As the responses were collected

through a web platform, 3 (0.61%) of the responses were obtained from overseas too but the majority of respondents were Indian 492 (99.39%) citizens.

The responses were received from all parts of the country and no specific cluster could be recognized, rather the distribution was dispersed pan India [Figure 1]. Demographic details of respondents suggested that 387 (78.2%) were residents of urban areas while 108 (21.8%) were rural respondents. The majority of study subjects (238; 48.1%) were in the 18–30 years of age range, followed by 30–45 years of age (154; 31.1%), and more than 45 years of age (103; 20.8%). The education of study subjects indicated that 223 (45.1%) respondents were post-graduates, 191 (38.5%) were graduates, and 81 (16.4%) were below senior secondary level. The occupations of study participants had vast distribution like homemakers (38; 7.7%), business (46; 9.3%), other professionals like engineers, lawyers, and other professionally educated people except health care workers (147; 29.7%), health care workers (117; 23.6%), and students (147; 29.7%). The health care workers were analyzed as a separate entity because they have prior knowledge regarding drugs and CAM.

It was found that 331 (66.9%) participants were using medicine other than conventional medicine (allopathy) or any commercial or homemade herbal medicine or therapy for the prevention of COVID-19 infection in contrast to 164 (33.1%), who never used such preparations. Two hundred and four (41.1%) respondents reported usage of CAM in the past for ailments other than COVID-19.

Table 1 shows the distribution of study subjects as per their demographic profile and CAM usage. The association between age, gender, and profession with CAM use was found to be statistically significant ( $P < 0.05$ ). The age group of 31–45 years was found to use CAM therapy more frequently as compared to other age groups ( $P < 0.05$ ), gender-wise females were using CAM therapy more frequently as compared to males ( $P < 0.05$ ), and health care workers were found to be less involved in CAM therapy usage ( $P < 0.05$ ) as compared to other professions in the study. There was no significant difference in CAM therapy based on the area of residence and educational status of the participants.

The common CAM preparations used by study participants as shown in Table 2 are vitamins and mineral-rich food products (43.2%), kadha (a polyherbal phytochemical-rich decoction) (36.6%), Ayurveda medicines (33.7%), herbal tea (30.4%), homemade concoctions (29.7%), yoga (25.1%), herbal preparations (20.8%), milk with turmeric (18.3%), homeopathic (15.8%), Unani (0.3%), and reiki-therapy (0.3%). Unani is an Arabic traditional medicine system that is practiced in Asian Muslim culture. Reiki-therapy is an energy-healing therapy that promotes relaxation. Other frequently used CAM preparations reported by respondents are *chyavanprash* (an Ayurveda health supplement made up of a concentrated blend of nutrient-rich herbs and minerals, the key ingredient is Indian gooseberry), *giloy* (*Tinospora cordifolia*) tablets

**Table 1: Demographic profile of study participants**

Variables	CAM use		P#
	Present	Absent	
Age (years)			
18–30	143 (28.89%)	95 (19.19%)	0.007*
31–45	115 (23.23%)	39 (7.88%)	
>45	73 (14.75%)	30 (6.06%)	
Gender			
Male	145 (29.29%)	88 (17.78%)	0.039*
Female	186 (37.58%)	76 (15.35%)	
Area of residence			
Urban	256 (51.72%)	131 (26.46%)	0.520
Rural	75 (15.15%)	33 (6.67%)	
Profession			
Business	32 (6.46%)	14 (2.83%)	0.046*
Professional**	106 (21.41%)	41 (8.3%)	
Homemaker	31 (6.26%)	7 (1.41%)	
Health care worker	71 (14.34%)	46 (9.3%)	
Student	91 (18.38%)	56 (11.31%)	
Education			
School pass out	55 (11.11%)	26 (5.25%)	0.647
Graduate	123 (24.85%)	68 (13.74%)	
Post-graduates	153 (30.91%)	70 (14.14%)	

\*P-value is statistically significant #P value is calculated by Chi-square test, \*\*Professionals include engineers, lawyers, and other professionally educated people except health care workers

**Table 2: The specific Complementary and Alternative Medicine therapy/preparation used by respondents (n=331)**

Complementary and Alternative Medicine	Frequency (percentage)*
Food rich in vitamins and minerals	131 (43.2%)
<i>Kadha</i>	111 (36.6%)
Ayurvedic medicines	102 (33.7%)
Herbal tea	92 (30.4%)
Homemade concoctions and other methods	90 (29.7%)
Yoga	76 (25.1%)
Herbal preparations	63 (20.8%)
Milk with turmeric	55 (18.3%)
Homeopathic	48 (15.8%)
Unani	01 (0.3%)
Rachytherapy	01 (0.3%)

\*Respondents selected multiple responses for this item

and juice, *tulsi* (*Ocimum tenuiflorum*), ginger (*Zingiber officinale*), pepper (*Piper nigrum*), cloves (*Syzygium aromaticum*), honey, *sudarshan ghanvati* (a multi-ingredient Ayurveda medicine containing *Chitrak* (*Plumbago zeylanica*), *Ashwagandha* (*Withania somnifera*), turmeric, *Mustaka* (*Nut Grass*), *Triphala* (a polyherb containing *Emblica officinalis*, *Terminalia bellerica*, and *Terminalia chebula*), arsenic 30 tablets (*Arsenicum album* 30C is a homeopathic medicine), lemon juice, cinnamon (*Cinnamomum verum*), steam inhalation, *swasari vati* (a calcium-rich herbal mixture

indicated in respiratory disorders. The main ingredients are salt cresse, gall plant, liquorice plant (*Glycyrrhiza glabra*), dried ginger, black pepper and Indian long pepper (*Piper longam*), *coronil* (a tri-herbal formulation containing extracts from *Withania somnifera*, *Tinospora cordifolia*, and *Ocimum sanctum*), and warm saline water gargles.

In response to the use of allopathic medication for the prevention of corona infection, 227 (45.8%) respondents denied its use. The most commonly consumed medication was multivitamins (including Vitamin C) and zinc [Table 3].

The study participants were asked about the reasons for using CAM, 13.7% (68) were not sure about any specific reason while 34.34% (170) used CAM to improve their immunity, 17.2% (85) wanted a preventive action while 34.74% (172) desired both immunity and preventive action from CAM.

Out of 331 responders who reported CAM intake, 46.9% (155) reported self-administration, 26.5% (88) reported intake on advice of relatives/friends, and 18.6% (62) reported intake after consultation with CAM practitioners. Knowledge about CAM therapy was also gained from other sources like social media, television, or literature by 8% (26) of responders.

Perception of study participants regarding the improvement of immunity revealed that 28.9% (143) believed that CAM preparations can improve immunity, 4.8% (24) thought that conventional therapy is useful in immunity enhancement, 54.9% (272) opted for mixed therapy, while 11.4% (56) were not sure about this.

10.7% (53) respondents believed that there is some CAM therapy/preparation available for the treatment of corona infection while 48.5% (240) were not of this opinion, whereas 40.8% (202) respondents were not sure of it. 52.3% (259) respondents said that they would prefer CAM therapy over allopathy for the prevention or treatment of corona infection, and the reasons for their preference are shown in Table 4.

The participants perceived CAM therapy as free of side effects (19.03%), while 6.73% were not sure about it. 31.3% believed that, if CAM and conventional medication are taken together, they won't alter each other's actions while 18.2% believed that combined therapy can lead to interaction [Table 5].

## DISCUSSION

The COVID-19 pandemic is unique in several aspects. There is confusion among scientists, healthcare professionals, and also among people regarding prevention as well as its treatment. Conventional modern medicine is at the forefront in managing COVID-19 cases, especially in critical care circumstances. Yet, recent solidarity trial has reported no significant effect of all five medicines which were earlier considered effective.<sup>[1]</sup> No proven effective medicines are thus available for prophylaxis as well as treatment. Vaccines are now available, but a recent study has reported that immune function in vaccinated

individuals after eight months of the last dose, is lower than that in unvaccinated individuals.<sup>[7]</sup>

During such difficult times when the conventional health system is unsure about the treatment strategies, people start looking for other alternatives and self-medication. A recent survey of Ebola outbreak survivors revealed that over 71% of survivors were self-medicating and about 50% of survivors reported the use of traditional and complementary medicines.<sup>[8]</sup>

The use of traditional Chinese medicines for COVID-19 prophylaxis and treatment has been reported,<sup>[5]</sup> but knowledge regarding the use of traditional Indian medicines for COVID-19 prophylaxis is limited. In the present study, an effort was made to find out the extent of utilization of CAM and traditional

**Table 3: Allopathic medicines used by respondents for prevention of COVID-19 infection**

Medicine	Frequency (percentage)*
Hydroxychloroquine	44 (8.9%)
Azithromycin	58 (11.7%)
Ivermectin	28 (5.6%)
Multivitamins and zinc	259 (52.3%)
Others	41 (8.3%)

\*Respondents selected multiple responses for this item

**Table 4: Reasons for preferring Complementary and Alternative Medicine therapy**

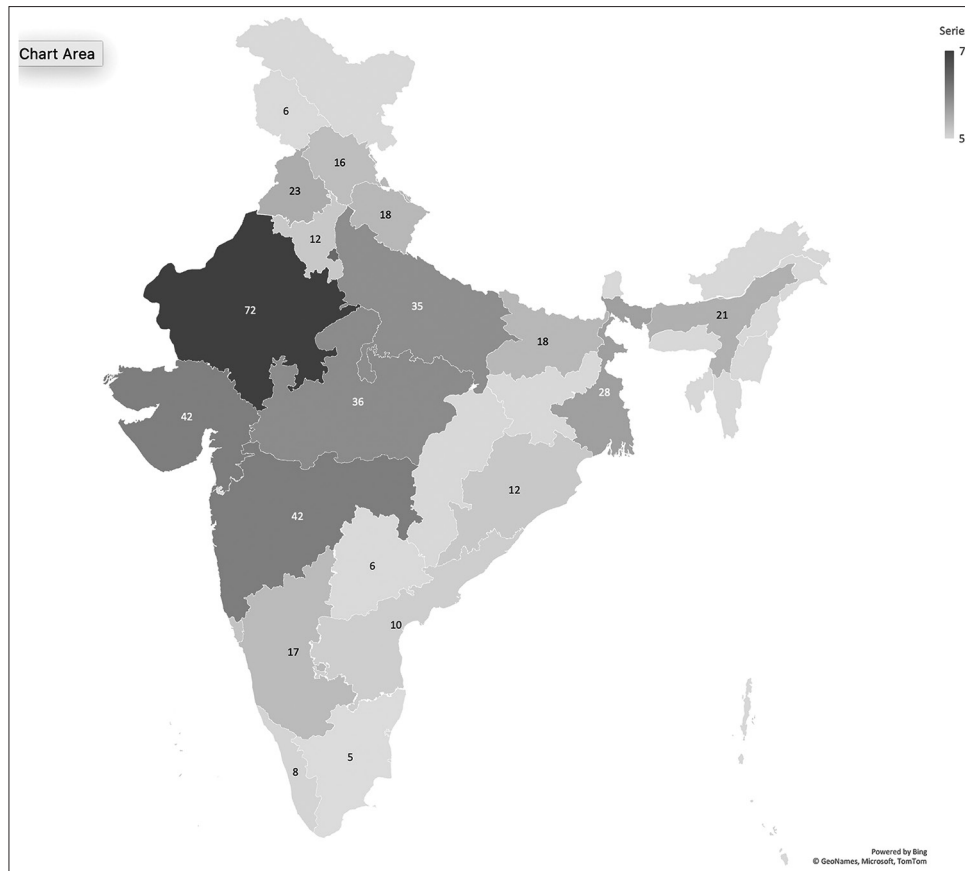
Reason	Frequency (percentage)*
Fewer side effects	181 (36.56%)
More effective	165 (33.33%)
Belief on therapy	132 (26.67%)
Ease of taking	102 (20.6%)
Cheaper	98 (19.8%)
Popularity of therapy	68 (13.74%)
Cultural reasons	45 (9.09%)
Influence of media	37 (7.47%)
To explore new therapy	33 (6.67%)
Previous experience	26 (5.25%)
Miscellaneous reasons	64 (12.93%)

\*Respondents selected multiple responses for this item

**Table 5: Perception of study participants regarding Complementary and Alternative Medicine therapy/preparations**

Perception	Frequency (percentage)
Side effects of CAM	
Yes	67 (13.5%)
No	223 (45.1%)
May be	205 (41.4%)
Interaction of CAM and conventional therapy	
Yes	90 (18.2%)
No	155 (31.3%)
May be	250 (50.5%)





**Figure 1:** Geographical distribution of participants

Indian medicines by general people in India as well as to find out the reasons behind their inclination toward CAM during the COVID-19 pandemic.

More than 65% of respondents were using medicines or therapies other than conventional medicines for the prevention of COVID-19 infection. As India has a long and rich history of Ayurvedic and other traditional medicines, people have strong faith in them. A recent telephonic survey done among asymptomatic patients at an isolation center has revealed that about one-fourth were using traditional therapies even though residing in the isolation center and more than half among them were consuming Ayurveda “Kadha.”<sup>[9]</sup>

In the present study, CAM use was most common in the 31–45 years age group with a statistically significant difference. CAM use was reported more in females than males, and more among homemakers as compared to professionals. There was no significant difference in CAM use depending on the area of residence and level of education. Similar results have been reported by a study on CAM utilization in urban and regional Australia, though the mean age in their study was 53 years.<sup>[10]</sup>

Among CAM users, more than 35% were using “Kadha,” which is an Ayurvedic polyherbal phytochemical-rich decoction for oral use, commonly used to control various respiratory disorders, while 33% were using Ayurvedic medicines. Respondents also reported the use of herbal tea,

homemade concoctions, milk with turmeric, homeopathic medicines, giloy (*T. Cordifolia*), tulsi (*Ocimum tenuiflorum*), ginger, pepper, cloves, honey, lemon juice, etc., Charan *et al.* have also reported the use of these herbal and household medicines by corona-positive patients.<sup>[9]</sup>

45.8% respondents denied of using any modern medicine (allopathic) for the prevention of COVID-19 infection. The most commonly used conventional medicine was multivitamin capsules and almost half of respondents accepted using them which is contradictory to 45% denying using modern medicines. It may be a possibility that multivitamins are considered nutritional supplements by people rather than medicine.

The majority of responders were using CAM as self-administered and only 18.6% consulted CAM practitioners. 36.6% of responders believe that traditional medicines are having lesser side effects, which might be a factor for self-administration. This is an alarming fact as it may result in drug–drug interactions and an increased risk of adverse effects in people with chronic or major organ diseases. Self-administration of Ayurvedic and other traditional medicines has been reported by other studies also.<sup>[11–14]</sup> Eboreime EA *et al.*<sup>[15]</sup> have also expressed concerns regarding the safety of traditional and complementary medicines rampantly self-administered by people for the prevention of COVID-19 infection. Clinicians should be aware of the frequent utilization of CAM and herbal

remedies by general people and should enquire about the same to prevent possible drug interactions. As many of these are age-old Ayurveda medicines, literature might be available on their indication and possible adverse effects. There is a need for collaboration between modern medicine and Ayurveda medicine systems as well as research organizations to find out evidence related to CAM and traditional drugs, also to enlist possible drug interactions and adverse effects.

Though about 35% of responders were using CAM for its immunity improvement and preventive action, only 10.7% believed that there is any CAM therapy/preparation available for its prevention. This shows that people are in desperate need of some preventive medicine or therapy, but they are in confusion or disbelief as no studies are available that prove the efficacy of any preventive drug. More than half of the participants replied that they would prefer CAM over allopathic medicines for prevention or treatment of corona infection, most common reason was a belief that CAM causes fewer side effects, followed by belief in efficacy.

A current systematic review and meta-analysis have concluded that adding Chinese herbal medicines to the standard care of COVID-19 patients improves their signs and symptoms,<sup>[16]</sup> but no such study has been done related to the efficacy of Ayurvedic medicines in India. Another recent systematic review and meta-analysis of randomized controlled trials have concluded a significant effect of the combined use of herbal and western medicine on signs, symptoms, and laboratory parameters of corona-infected patients.<sup>[17]</sup> Though people have faith in traditional and Ayurvedic medicines, steps must be taken in directions to provide evidence for traditional medicinal approaches. A pragmatic plan for the implementation of the Ayurvedic system in the prevention and treatment of COVID-19 infection has been proposed by Rastogi S *et al.*,<sup>[18]</sup> yet more steps are needed in this direction to ensure safe and informed CAM utilization by people.

### Limitations

This study was done through online survey forms circulated through social platforms; the possibility of selection bias was a limitation. Also, its reach to rural areas and people not on social media was limited. The present study thus provides a rough picture of CAM utilization for corona prevention, and its findings could not be applied to the general public. Therefore, more such studies are recommended especially in a community set up to establish the extent and pattern of CAM among people during such a pandemic and factors governing such use.

### CONCLUSION

Complementary and alternative medicine utilization for the prevention of corona infection is widespread and self-administration is prevalent. As no specific cure is available for corona infection in the conventional system, people believe in traditional medicines more than standard modern medicines, yet confusion exists. People believe that CAM is safe and increase immunity, but studies providing evidence of their efficacy and safety are limited. There is a need for clinicians

to be vigilant about CAM use and self-medication, as well as to spread awareness among general people regarding possible side effects and drug–drug interactions between traditional and modern medicines, and that these medicines should be taken after proper consultation from CAM consultants. Further, studies are needed to know the extent of various parallel medicine systems used by people and predictors of such usage.

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### Conflicts of interest

There are no conflicts of interest.

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