

Original Research Article

Knowledge, attitude, and practices towards COVID-19 among ayurvedic practitioners of Karnataka, India: a cross-sectional survey

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ABSTRACT

Background: COVID-19 is a highly infectious disease which was first identified in Wuhan, China and was subsequently declared as pandemic by WHO. As it is rapidly spreading and taken lives of millions, various countries have adopted unprecedented measures and treatment modalities. Since India has historical roots of Ayurveda, Ayurvedic system of medicine was consider to boost the immunity and also to prevent the infection. Hence the knowledge, attitude and practice of an Ayurvedic practitioner plays a major role in health system, which further helps to know the preparedness among them. With this context this study was conducted to assess knowledge, attitude and practice among them towards COVID-19.

Methods: Online cross sectional study was done among Ayurvedic practitioners of Karnataka. Google form was sent through social media to collect data and analysed using SPSS 25.

Results: The mean age among the participants was 30.5±9.1 years. Majority were females (54.3%), and 59.1% are currently practicing Ayurveda. Mean knowledge score was 10.5±1.9, thus 86.6% of the participants had good knowledge. 70.1% agreed for the fact that Ayurveda should be considered as a mainstream medicine whereas 88.2% were in opinion that Ayurveda should be considered as complementary therapy along with conventional treatment. Statistical association was seen between education and knowledge.

Conclusions: Good knowledge towards COVID-19 was seen among 86.6% and majority of them want Ayurveda to be considered as complementary medicine but before that evidence based treatment protocol needs to be developed to support claims regarding treatment/prevention of COVID-19.

Keywords: Attitude, Ayurveda, Ayurvedic practitioners, COVID-19, Knowledge, Practice

INTRODUCTION

Corona viruses may cause illness in animals or humans. Several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) in humans. Novel corona virus (COVID-19) is an emerging respiratory tract infectious disease caused by the coronavirus subtype SARS-CoV-2 infection which

was first detected in Wuhan, China, in December 2019 which has wreaked havoc worldwide.

COVID-19 was declared as global pandemic by the world health organization (WHO) which is presently engulfing almost all the countries affecting over 12,844,410 people and has caused 5,67,657 deaths as of 12th July 2020.¹ India had 850,358 active cases and 536,231 discharged/cured cases with 22,687 deaths as on 12th July 2020.² It is expected that the number will grow in future.

Therefore, all possible preventive action should be taken to control the spread of the infection. Once the individual develops the infection it is equally important to treat him with the proper medication so that further transmission can be prevented.

Currently, there is no specific antiviral treatment and preventive vaccine. Therefore, the guidelines are recommended to decline the spread of infection and respond to the challenges during the epidemic. In terms of symptoms, the WHO reported that more than 80% of COVID-19 patients showed mild symptoms and recovered without any medical intervention, approximately 20% of infected cases had a severe illness such as shortness of breath, septic shock and multi-organ failure, and it has been reported that an estimated 2% of cases can be fatal. The risk of increased severity was noticed in the elderly and with underlying chronic diseases. The best prevention is to avoid being exposed to COVID-19. This is done by washing hands with soap and water, and using face masks, isolating confirmed and suspected cases. Some previous studies showed that HCWs had a lack of knowledge and attitude toward MERS CoV, and SARS.³

Healthcare workers (HCWs) are at the frontline of COVID-19 pandemic response and are exposed to dangers like pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout and stigma, and physical violence. A poor understanding of the disease among HCWs can result in delayed identification and treatment leading to rapid spread of infections.⁴

Although allopathic system of medicine is being used for treating the infection, there is no specific medicine for COVID-19 as of now. Trails have been going on Ayurvedic system of medicine for immunity boosting, prevention and cure of disease. Just like China included Traditional Chinese Medicine (TCM) in the treatment protocol of coronavirus, India is also looking forward to incorporate its ancient medicine in the battle against the pandemic.

Ministry of AYUSH releases the recommendations, which emphasize on Ayurveda's immunity boosting measures for self-care during COVID 19 crisis. Some of the measures include, drinking hot water throughout the day, daily practice of yogasana, pranayama and meditation for at least 30 minutes, using certain spices like haldi (turmeric), jeera (cumin), dhaniya (coriander) and lahsun (garlic) during cooking. Immunity promoting measures include eating chyavanprash, drinking golden milk (turmeric powder in milk), herbal tea or decoction (kadha) made from tulsi (basil), dalchini (cinnamon), kalimirch (black pepper), shunti (dry ginger) and munakka (raisin). During dry cough/sore throat, steam inhalation with fresh pudina (mint) leaves or ajwain (caraway seeds) is advised.⁵

With the changing scenario, the Ayurvedic fraternity is also looking forward for its active involvement in the fight against the COVID menace and their current awareness about the disease, along with the attitude and relevant practices are of great importance. With the less evidence on their knowledge about the corona virus, this study was taken up among Ayurvedic practitioners in Karnataka, India.

Objectives

To assess the knowledge, attitude and practice towards COVID-19 among Ayurvedic practitioners of Karnataka, India; and to find out the association between socio-demographic factors and Knowledge score among Ayurvedic practitioners of Karnataka, India.

METHODS

Online cross-sectional survey was conducted among Ayurvedic practitioners of Karnataka, India. Study was conducted for a period of 2 months (May to June 2020). Data was collected through Google form which had 2 parts. First part consisted questions related to socio-demographic profile and second part consisted question related to KAP. This online questionnaire contained a total of 32 questions among which 13 for assessing Knowledge, 10 for assessing attitudes and remaining 9 for assessing practice.

Assuming the prevalence of knowledge about COVID-19 to be 50% as it's a new disease, sample size was calculated. Considering knowledge to be 50% with 95% confidence level and 10% relative precision, minimum sample size to be studied was calculated using sample size formula of single proportion to be 100.

As more responses were obtained than the required sample size, all the 127 responses were included. Data was analyzed using SPSS version 25 (Licensed to JSS AHER). Results were expressed as percentage, mean, and standard deviation. Chi-square was applied and Statistical significance was considered at $P < 0.05$.

Inclusion and exclusion criteria

Participants who were studying Ayurveda and/or practicing Ayurvedic system of medicine and who had access to the social media platform like WhatsApp, Facebook and Email were included in study and those who did not give consent and had no access to the social media platform were excluded. Later Google form was sent to them through social media platform. Further they were asked to share among their colleagues and friends who belongs to the Ayurveda fraternity.

Knowledge scoring

Scoring was done only for knowledge based questions as attitude and practice questions were subjective and

perspective based. For each correct answer 1 mark was assigned and a mean value was calculated. Participants who scored more than mean value were considered to have good knowledge and who scored less than mean value was considered to have poor knowledge.

RESULTS

The mean age among the participants was 30.5±9.1 years. Majority were in the age group of 20-30 years (69.3%), followed by 31-40 years (20.5%), >50 years (6.3%), and 41-50 years (3.9%). 54.3% of the participants were females and 45.7% were males. 77.2% were either studying or completed bachelor of Ayurvedic medicine and surgery (BAMS) and 22.8% were either doing or complete post-graduation. 59.1% were practicing Ayurveda, 18.1% were studying under-graduation, 12.6% were pursuing post-graduation in Ayurveda and 10.2% were working as professors (Table 1).

In the present study, mean knowledge score was 10.5±1.9, thus 86.6% of the participants had good knowledge where as 13.4% had poor knowledge about COVID-19. Clinical symptoms of the COVID-19 were known to 97.6% of the participants and 92.9% knew about the incubation period. The severity of the disease is more likely among elderly, those with chronic illnesses and obese individuals according to 87.4% of the participants and 92.1% were agreed that the virus spreads via respiratory droplets of the infected individuals. Only 58.3% of the participants knew that antibiotics aren't the first line of treatment, 52.8% disagreed that influenza

vaccine offers protection against the disease and 93.7% believed that currently there is no effective cure for COVID-19 but early symptomatic and supportive treatment is beneficial in recovery. 96.1% knew that isolation and treatment of the infected with the virus are effective ways to control the spread of the virus, 98.4% of the participants knew that the contacts should immediately self-quarantine themselves in a proper place and in general the quarantine duration is 14 days, 66.1% believed that Ayurvedic measure to strengthen immunity should be considered amidst the pandemic.

Table 1: Distribution of participants based on Socio-demographic details.

Variables	Frequency (n=127)	Percent	
Age (in years)	20-30	88	69.3
	31-40	26	20.5
	41-50	5	3.9
	>50	8	6.3
Gender	Female	69	54.3
	Male	58	45.7
Education	BAMS	98	77.2
	MD/MS in Ayurveda	29	22.8
Occupation	Practicing Ayurveda	88	69.3
	PG student	16	12.6
	UG student	23	18.1

Table 2: Distribution of participants based on the knowledge regarding coronavirus.

Knowledge questions	Frequency	Percentage
The main clinical symptoms of COVID-19 are fever, cold, sore throat, dry cough, and myalgia		
False	3	2.4
True	124	97.6
The incubation period ranges between 2-14 days		
False	4	3.1
True	118	92.9
I don't know	5	3.9
Not all persons with COVID-19 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.		
False	13	10.2
True	111	87.4
I don't know	3	2.4
The COVID-19 virus spreads via respiratory droplets of infected individuals		
False	9	7.1
True	117	92.1
I don't know	1	0.8
Antibiotics are the first line of treatment		
False	74	58.3
True	41	32.3
I don't know	12	9.4
Influenza vaccine also gives protection from COVID-19		
False	67	52.8
True	35	27.6
I don't know	25	19.7

Continued.

Knowledge questions	Frequency	Percentage
There currently is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection		
False	4	3.1
True	119	93.7
I don't know	4	3.1
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.		
False	4	3.1
True	122	96.1
I don't know	1	0.8
People who had contact with an infected COVID-19 patient should immediately self-quarantine in a proper place. In general, the quarantine period is 14 days.		
False	1	0.8
True	125	98.4
I don't know	1	0.8
Ayurvedic protocol to build immunity in the midst of the coronavirus pandemic is useless		
False	84	66.1
True	34	26.8
I don't know	9	7.1
Impaired Agni can make one more prone for COVID-19?		
False	19	15.0
True	87	68.5
I don't know	21	16.5
Immuno-modulators (rasayana) is a must in all individuals with chronic illnesses to improve immunity against COVID-19		
False	12	9.4
True	107	84.3
I don't know	8	6.3
If one is taking precautions as per the Ayurvedic protocol there is no need to follow respiratory etiquettes		
False	88	69.3
True	32	25.2
I don't know	7	5.5

Table 3: Distribution of participants based on the attitude regarding coronavirus.

Attitude	Frequency	Percentage
Do you have the confidence that India can win the battle against the COVID-19 virus?		
No	13	10.2
Not sure	14	11.0
Yes	100	78.7
Do you think Ayurveda should also be considered as a mainstream medicine in the treatment of nCOVID-19?		
No	24	18.9
Not sure	14	11.0
Yes	89	70.1
Ayurveda should be used as a complementary therapy along with conventional medicine for COVID-19		
No	10	7.9
Not sure	5	3.9
Yes	112	88.2
Do you think drugs like haridra (<i>Curcuma longa</i>), guduchi (<i>Tinospora cordifolia</i>), shunti (<i>Zingiber officinale</i>), pippali (<i>Piper longum</i>) prevent COVID-19?		
I don't know	5	3.9
No	10	7.9
Yes	112	88.2
Do you think Ayurveda can treat COVID-19?		
I don't know	26	20.5
No	17	13.4
Yes	84	66.1

Continued.

Attitude	Frequency	Percentage
Do you think following healthy diet, exercise regimen, adequate sleep reduces the risk of COVID-19?		
No	12	9.4
Not sure	10	7.9
Yes	105	82.7
In case there is an effective vaccine against COVID-19 would you take it and recommend it to others?		
No	8	6.3
Not sure	12	9.4
Yes	107	84.3
Do you think pratimarsha nasya is effective against COVID-19?		
No	14	11.0
Not sure	35	27.6
Yes	78	61.4
Strict action must be taken against persons/agencies involved in dissemination of misleading information regarding AYUSH drugs and services in relation to COVID-19		
No	4	3.1
Not sure	1	.8
Yes	122	96.1
I find tele-medicine to be helpful during this crisis		
No	18	14.2
Not sure	27	21.3
Yes	82	64.6

Table 4: Distribution of participants based on the practice regarding coronavirus.

Practice	Frequency	Percentage
In recent days, have you gone to any crowded place?		
No	102	80.3
Yes	25	19.7
In recent days, have you worn a mask when leaving home?		
No	7	5.5
Yes	120	94.5
Do you wash your hands with soap often?		
No	2	1.6
Yes	125	98.4
Do you use any ayurvedic soap/gel/powder to sanitize your hands?		
No	51	40.2
Yes	76	59.8
Do you use alcohol based hand sanitizer?		
No	8	6.3
Yes	119	93.7
Do you observe social distancing in your clinic/ hospital/casual interactions?		
No	6	4.7
Yes	121	95.3
Are you currently on any specific Ayurvedic regimen/treatment to protect yourself from COVID-19		
No	54	42.5
Yes	73	57.5
In case a patient with COVID related symptoms approaches you what would you suggest?		
Explain the risk to the patient/attenders and refer to COVID hospital	102	80.3
Refer to other general clinic/hospital	12	9.4
Symptomatic Ayurvedic treatment	13	10.2

Among the participants, 68.5% agreed that impaired Agni can make one more prone to the COVID-19, 84.3% believed rasayana (immuno-modulators) must be taken by all those who are chronically ill in order to improve their

immunity and 69.3% of the participants agree even though anyone is following Ayurvedic regimen for protection against the disease, respiratory etiquettes should also be considered (Table 2).

78.7% of the participants had positive attitude that India can win against the COVID-19. 70.1% think that Ayurveda should be considered as a mainstream medicine in the treatment of COVID-19 whereas 88.2% were of the opinion that Ayurveda should be considered as complementary therapy along with conventional treatment. Nearly 88% of the participants thought that drugs like haridra (*Curcuma longa*), guduchi (*Tinospora cordifolia*), shunti (*Zingiber officinale*), pippali (*Piper longum*) prevent COVID-19. 66.1% believe that Ayurveda can treat the COVID-19 and 82.7% of them thought that a healthy lifestyle which includes diet, exercise, adequate sleep reduces the risk of developing the disease. Once there is an effective vaccine 84.3% of the participants would get themselves vaccinated and also recommend it to others and 61.4% of the participants thought that pratimarsha nasya (nasal application) can be effective against the disease. 96.1% demand strict action against persons/agencies involved in disseminating misleading information regarding AYUSH drugs and services in relation with the COVID-19 and 64.6% have found tele-medicine to be helpful during this crisis (Table 3).

In our study, 29.1% of the respondents recommended ashwagandha, 17.3% vasa, 14.1% haridra, 10.2% amalaki and 7.8% guduchi, maricha, shunti along many other herbal formulations were recommended by the respondents in the view of preventing COVID-19.

In our study, 80.3% avoided going to crowded places, 94.5% wore masks while leaving their houses, and 98.4% had practice of washing hands with soap. Nearly 60% of participants were using Ayurvedic soap/gel/powder to sanitize their hands and 93.7% uses alcohol based hand sanitizer. 95.3% of the practitioners followed social distancing norms in their clinics/hospitals and even during their casual interactions. 57.5% of the participants are currently on specific Ayurvedic regimen/treatment to protect them from COVID-19 and 80.3% are explaining the risk if they are having COVID-19 related symptoms and referring them to COVID hospital (Table 4).

Table 5: Association between socio-demographic factors and knowledge.

Socio-demographic factors		Knowledge		P value
		Good (%)	Poor (%)	
Education	BAMS	81 (82.7)	17 (17.3)	0.016
	MD/MS in Ayurveda	29 (100%)	0	
Occupation	Practicing Ayurveda	77 (87.5)	11 (12.5)	0.057
	PG student	16 (100)	0	
	UG student	17 (73.9)	6 (26.1)	

All of those who are studying or completed MD/MS in Ayurveda had good knowledge and 82.7% of those who studying or completed BAMS are found to have good knowledge. This shows there is a statistically significant association between education qualification and

knowledge at p value 0.0016. Even though there is no statistical association (0.057) between occupation and knowledge, those who practicing Ayurveda and studying post-graduation are having more good knowledge when compared to under-graduation (Table 5).

DISCUSSION

The mean age among the participants was 30.5±9.1 years. Majority were females (54.3%), 77.2% were either studying or completed their under graduation and 59.1% are currently practicing Ayurveda.

Mean knowledge score in our study was 10.5±1.9, thus 86.6% of the participants had good knowledge. The findings were similar to a study conducted by Saqlain et al in Pakistan and Nepal et al in Nepal, among healthcare workers, where 93.2% and 82.15% of the participants had good knowledge scores towards COVID-19 respectively.^{6,7} Similarly a study conducted by Zhou et al among healthcare workers in Henan, China showed that 89% of HCWs had sufficient knowledge, about 85% of them feared self-infection with the virus, and 89.7% followed correct practices regarding COVID-19.⁸ The good knowledge among the participants is directly related to the education qualification of the study participants.

More than 97% of the participants in our study knew about clinical symptoms of COVID-19. This result is in par with result of the conducted by Saqlain et al among healthcare workers where 98.7% knew about common symptoms of COVID-19.⁶ The incubation period was known by 92.9% in the present study whereas 96.38% participants knew about incubation period in the study by Saqlain et al.⁶

As reported by Saqlain et al 78.99% of the respondents knew the severity of the disease is more likely in patients with other comorbidities which is in accordance with our findings where 87.4% respondents knew it whereas in the same study, 17.87% believed antibiotics to be the first line of treatment and in our study 32.3% agreed that antibiotics are the first line of treatment.⁶ This difference in the result is due to participation of different fraternity of health care professionals.

In the present study, 96.1% of the respondents strongly agreed that COVID patients should be kept in isolated and treated for COVID-19 and is the effective ways to reduce the spread. 98.4% of the participants knew that the contacts should immediately self-quarantine themselves in a proper place and in general the quarantine duration is 14 days. This results shows the awareness among our participants.

In this study, 66.1% believed that Ayurvedic measure to strengthen immunity should be considered amidst the pandemic, 68.5% agreed that impaired Agni can make one more prone to the COVID-19 and 84.3% of the participants believe rasayana must be taken by all those

who are chronically ill in order to improve their immunity against the disease. From these results we can see that, more than half of the participants agreed and recommended Ayurveda for strengthening and boosting the immunity against the infection.

Among 127 Ayurvedic practitioners, 88.2% were of the opinion to consider Ayurveda as complementary therapy along with conventional treatment. Nearly 88% of the participants thought that drugs like haridra (*Curcuma longa*), guduchi (*Tinospora cordifolia*), shunti (*Zingiber officinale*), pippali (*Piper longum*) prevent COVID-19, 61.4% of them thought pratimarsha nasya (nasal application) can be effective against the disease and 29.1% of the respondents recommended ashwagandha, 17.3% vasa, 14.1% haridra, 10.2% amalaki and 7.8% guduchi, maricha, shunti along other herbal formulations in the view of preventing COVID-19.

In the present study, all of those who are studying or completed MD/MS in Ayurveda had good knowledge and 82.7% of those who studying or completed BAMS were found to have good knowledge. This shows a statistically highly significant association between education qualification and knowledge at p value 0.0016.

Limitations of the study were most of the attitude and practice questions were subjective; and study cannot be generalized to all the Ayurvedic practitioners.

CONCLUSION

Good knowledge towards COVID-19 was seen among 86.6% of the Ayurvedic practitioners. Majority of them want Ayurveda to be either considered as complementary medicine or mainstream of medicine for COVID-19, but before that evidence-based treatment protocol needs to be developed to support claims regarding treatment/prevention of COVID-19

Measures regarding training of AYUSH doctors regarding infection prevention should be taken as it will be helpful in control of infectious diseases, their appropriate management and also boosts the confidence of these doctors.

Recommendations

As our study lacks complete representativeness due to its online nature of study thus more studies are warranted to

investigate the KAP towards COVID-19 among Ayurvedic practitioners.

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