Original Research Article

Knowledge, perception and practices towards COVID-19 pandemic among epidemiologists of India during period of the COVID-19 Pandemic: Online cross-sectional survey

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Abstract

Background: The success of battle against COVID-19 depends on Epidemiologists adherence towards infection control measures, which is greatly influence public by their knowledge, perception, and practices towards this infection. **Aim:** To assess the knowledge, perception, and practices towards COVID-19 among Epidemiologists of India. **Materials and methods:** A quick online cross-sectional survey was performed among Epidemiologists who were working at State and District level during COVID-19 Pandemic. A pre-validated online questionnaire on COVID-19 was distributed through social media (Whatsapp), email to Epidemiologist. The questionnaire comprised of five sections to collect data regarding Consent, demographics, knowledge, perception, and practices towards COVID-19 pandemic. Descriptive statistics like percentage, mean, SD (Standard Deviation) and association of demographics with knowledge, perception and practice scores about COVID-19. **Results:** A total of 314 participants (Males 231; Females 83) completed the survey tool. The mean age of the study participants was 36.4±5.78. The main sources for COVID-19 information were MOHFW/WHO website (93.31), social media (4.78%) and television (2.23%). Majority of the respondents shown a correct rate of knowledge (92.4%), perception (90.59%), and practices (99.20%) towards COVID-19. More Respondents in age group 31-35 years; higher education level and pursuing healthcare profession were positively associated with high knowledge, perception, and practices scores towards COVID-19. **Conclusion:** The study concludes, majority of the respondents shown a good knowledge and right practices towards COVID-19 pandemic, still there was a few gap in right perception towards underlying myths and facts about COVID-19. Providing circulating WHO myth busters through media or social networks can resolve underlying misconceptions about COVID-19 and improves the knowledge, perception, and practices among epidemiologists.

Keywords: SARS CoV-2, knowledge, perception, practices, COVID-19.

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an emergent respiratory infection caused by the most recently discovered severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and it was first detected in December 2019 in Wuhan, China.[1] The World Health Organization (WHO) declared the SARS-CoV-2 outbreak as a pandemic on March 11, 2020, due to its alarming levels of spread across the globe.[2] India is under nation-wide lockdown since 25 March, 2020 to curb the spread of the novel corona virus. Currently, there is no availability of any

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proven specific treatment or prevention strategy to fight against COVID-19.[5] Non-pharmaceutical interventions like; quarantine of exposed individuals, isolation of suspected/ confirmed cases, and sensitization of the general public about control measures are the only available options to limit the spread of this new virus.[6] The success of battle against COVID-19 depends on public and government adherence towards infection control measures, which is greatly affected by their knowledge, perception, and practices towards the COVID-19 pandemic.[7] Epidemiologist is play very important role at District level in this COVID-19 pandemic and influence public to adherence towards control measures. So this online survey aimed to assess the knowledge, perception, and practice towards COVID-19 among epidemiologists of India, during this rapid rise period.

MATERIALS AND METHODS

Considering the current pandemic and lockdown situation, this study conducted using an online questionnaire. This is a quick online cross-sectional survey that was conducted for 15 days from 1st to 15th November, 2020. Due to nationwide lockdown during this period, it is very difficult to have sampling, so we adopted the structured questionnaire in Google form format including consent form to collect the data.

Study criteria

Epidemiologist who working at state or District level in Integrated Disease Surveillance Program in India during survey consider as participant. If he/she willing to participate by opting 'yes' for the first question (Are you interested in joining this online COVID-19 survey) after reading background information on the first page were eligible for this survey. Participation in the study was kept purely voluntary.

Sample size determination

As per collected information during survey, in India total 563 epidemiologists working in different state in different district. A convenient sampling technique was used to catch the required sample for this survey. Out of 563 epidemiologists 314 responds to questionnaire and participate in survey.

Survey tool

The Google form questionnaire comprises five sections to collect data regarding consent form, demographic variables, knowledge, perception, and practices towards COVID-19 pandemic. The demographic variables like age, gender, working District and state, educational qualification are included in the tool. The knowledge section had 14 questions (Table 2), the perception domain had 11 questions regarding myths and facts about COVID-19 (Table 2), The practice section comprised 8 questions (Table 2). These questions had options (True/False/Yes/No) to answer. A correct answer was scored 1 point and incorrect answer was 0 point.

Data collection

The data was collected through The Google form questionnaire online survey by providing a link through WhatsApp messenger, email to fill the questionnaire. First page of the form describes background, core objectives, and expected outcomes of this KPP survey. The participant need to opt 'yes' for the first question (Are you interested in joining of this online KPP survey), to enter into survey.

Validation of a survey tool and Data analysis

A suitably designed, self-administered questionnaire on COVID- 19 was prepared and subjected to the face validity and reliability assessment. Questionnaire validation (content) was made by a panel of epidemiologists. A total of 33 questions (knowledge 14; perception 11; practice 8) are present in the survey tool. Data analysis was done with help of descriptive statistics like percentage, mean and SD (Standard deviation) and Chi square test was applied to test the level of significance. The statistical significance level was fixed at $P < 0.05$.

RESULTS

Demographics

A total of 314 participants (Male 231, Female 83) completed the Survey tool. The average age of the study participants was 36.4 and majority (109; 34.71%) were in 31-35 years age group. Majority of the participants were from Maharashtra state (27; 8.60%).The main sources for COVID-19 information were MOHFW/WHO Website (293; 93.31%). The complete demographic details of study participants were represented in Table 1.

Table 1: Demographic profile of the study participants (n=314)

Age Group	Frequency	Percentage
24-30	62	19.75
31-35	109	34.71
36-40	74	23.57
41-45	50	15.92
46-50	16	5.10
51-55	2	0.64
>56	1	0.32

Gender		
Male	231	73.57
Female	83	26.43
Educational Qualification		
UG	23	7.32
PG	291	92.68
Source of Information		
TV	7	2.23
Social Media	15	4.78
MOHFW/WHO Website	293	93.31
Others	7	2.23
State		
Andaman and Nicobar Islands	3	0.96
Andhra Pradesh	11	3.50
Arunachal Pradesh	1	0.32
Assam	19	6.05
Bihar	18	5.73
Chandigarh	1	0.32
Chhattisgarh	12	3.82
Dadra and Nagar Haveli	1	0.32
Delhi	1	0.32
Goa	3	0.96
Gujarat	9	2.87
Haryana	19	6.05
Jammu and Kashmir	10	3.18
Jharkhand	19	6.05
Karnataka	21	6.69
Kerala	4	1.27
Madhya Pradesh	17	5.41
Maharashtra	27	8.60
Manipur	7	2.23
Meghalaya	7	2.23
Mizoram	2	0.64
Nagaland	5	1.59
Odisha	11	3.50
Pondicherry	1	0.32
Punjab	8	2.55
Rajasthan	21	6.69
Sikkim	1	0.32
Tamil Nadu	13	4.14
Telangana	7	2.23
U. T. of DNH Daman and Diu	1	0.32
Uttar Pradesh	15	4.78
Uttarakhand	7	2.23
West Bengal	12	3.82

Knowledge about COVID-19

The mean COVID-19 knowledge score of the respondents was 12.93, suggesting overall 92.40% correct rate of knowledge. More than 90% of the study participants were aware about; name and origin of the virus, incubation period, symptoms, and all infected persons not develop the symptoms and serious illness, people at high risk for serious COVID-19 illness, mode of transmission, prevention and control, COVID-19 Testing. However, only half of the participants are aware about COVID-19 cannot be transmitted through air as shown in Table 2.

Perception about COVID-19

The mean COVID-19 perception score of the respondents was 9.96, suggesting overall 90.59% correct rate of perception. More than three-fourth of the participants had a right perception regarding vaccine unavailability in global market (303; 96.5%), and COVID-19 is not transmitted by the mosquito bite (314; 100%). virus can transmit in hot and humid climate areas (303; 96.5%), hot bath cannot protect the person from COVID-19 (267; 85.03%), hand dryers are not effective in killing virus (282; 89.81%), pneumonia vaccine cannot protect

COVID-19 (298; 94.90%), and antibiotics are not effective against COVID-19 (228; 72.61%),spraying alcohol or chlorine all over the body can harm the skin and mucous membranes (290; 92.36%), eating garlic cannot prevent COVID-19 (276; 87.90%), and breath holding test is not a right test to diagnose COVID-19 (292; 92.99%),Use of Inj Remdesivir in all symptomatic COVID-19 Patients compulsory (276; 87.90%) as shown in Table 2.

Practices towards COVID-19

The mean COVID-19 practice score of the respondents was 7.93, suggesting overall 99.20% correct rate of practice. All the participants had rational practices towards COVID-19 like; elbow sneezing, maintenance of physical distance, hand hygiene, wearing mask and avoiding shake hand, avoiding touch over eyes, nose, and mouth, taking bath or sanitize after coming from office daily. The participants using Arogya Setu application recommended by government of India were 294; 93.63%. The complete results are depicted in Table 2.

Table 2: Knowledge, perception and practice towards COVID-19

	Question (Correct Answer)	Correct Answer No.	Percentage
Knowledge	1. COVID-19 is an infectious disease caused by the most recently discovered novel coronavirus in Wuhan, China (TRUE)	314	100
	2.The time between catching the novel coronavirus and beginning to have symptoms will be 14 days (TRUE)	277	88.22
	3. Fever, dry cough, tiredness, and body pains are the most common symptoms in COVID 19 (TRUE)	310	98.73
	4. The person infected with novel coronavirus definitely develops symptoms (FALSE)	303	96.50
	5. The majority of people (about 80%) who get COVID-19 becomes seriously ill and develops breathing problem. (FALSE)	300	95.54
	6. Old age people, and those with underlying medical problems like high BP, heart problems, or diabetes, are more likely to develop serious illness.(TRUE)	312	99.36
	7. People can also catch COVID-19 if they breathe in droplets from a person with COVID-19 who coughs out or exhales droplets (TRUE)	314	100
	8. Social distance means stay more than 1 m (3 feet) away from a person who is sick. (TRUE)	273	86.94
	9. COVID-19 can be transmitted through the air. (FALSE)	142	45.22
	10. Regular hand wash, social distancing, avoiding crowd, wearing a mask, and stay at home can protect the person from getting COVID-19 (TRUE)	314	100
	11. Who should test for COVID-19?1)All Symptomatic 2)All asymptomatic High-Risk Contacts 3) All asymptomatic high-risk Individuals in Containment Zone 4)All pregnant women in/near labor who are hospitalized for delivery 5)All symptomatic neonates	308	98.09
	12. In Rapid Antigen Test Nasopharyngeal swab and in RT-PCR Oropharyngeal/Nasopharyngeal swab is taking. (TRUE)	303	96.50
	13.If symptoms develop following a negative RAT Test, a repeat RT-PCR should be done. (TRUE)	309	98.41
	14. No retesting is recommended prior to discharge from COVID-19 facility after clinical recovery.(TRUE)	283	90.13
Perception	1. COVID-19 virus CANNOT be transmitted in areas with hot and humid climates. (FALSE)	303	96.50
	2. Taking a hot bath CANNOT prevent the novel Corona virus disease (TRUE)	267	85.03
	3. The novel Coronavirus CAN be transmitted through mosquito bites (FALSE)	314	100
	4. Hand dryers are NOT effective in killing the novel Coronavirus. (TRUE)	282	89.81
	5. Spraying alcohol or chlorine all over your body cannot harm the skin and mucous membranes (FALSE)	290	92.36
	6. Vaccines against pneumonia can protect you against the novel Coronavirus (FALSE)	298	94.90
	7. Eating garlic helps in the prevention of infection with the novel Coronavirus (FALSE)	276	87.90
	8. Antibiotics are NOT effective in preventing and treating the novel Coronavirus (TRUE)	228	72.61

	9. Holding breath for more than 10 sec is a test for COVID-19. (FALSE)	292	92.99
	10. Vaccines are available in the global market to prevent the novel Coronavirus. (FALSE)	303	96.50
	11. Use of Inj Remdesivir in all symptomatic COVID-19 Patients compulsory. (FALSE)	276	87.90
Practice	1. Do you cover your mouth and nose with a tissue or elbow when sneezing? (Yes)	314	100
	2. Do you follow social distancing (>1 m) when you go and meet other people? (Yes)	314	100
	3. Do you perform regular hand wash or use of Sanitizer in your daily routine activities? (Yes)	314	100
	4. Do you wear a mask when you visit a hospital or infected person, Containment zone? (Yes)	314	100
	5. Do you use the Arogya sethu application given by the government of India? (Yes)	294	93.63
	6. Do you give shake hands upon the meeting of friends/family members/others? (No)	314	100
	7. Do you touch frequently your mouth, nose, and eyes? (No)	314	100
	8. Do you take bath or sanitize after coming from the office daily? (Yes)	314	100

Factors associated with knowledge, perception and practice towards COVID-19

Knowledge, perception and practice scores are significantly different across educational levels ($P < 0.05$). The complete results are depicted in **Table 3**.

Table 3: Association of demographic variables towards knowledge, perception and practice score towards COVID-19

Variable	Knowledge		Perception		Practice	
	Mean	P value	Mean	P value	Mean	P value
Gender		0.8		0.24		0.87
Male	12.9		9.9		7.93	
Female	12.8		10.02		7.93	
Age		0.1986		0.0762		0.8093
24-30	12.8		9.88		7.91	
31-35	13.04		10.16		7.93	
36-40	13.01		10.12		7.93	
41-45	12.68		9.72		7.96	
46-50	12.62		8.93		7.93	
51-55	12		9.5		8	
>56	14		11		8	
Educational Qualification		0.0005		0.01		0.176
UG	12.21		9.17		7.86	
PG	12.99		10.02		7.94	

DISCUSSION

This study conducted in India to evaluate the knowledge, perception and practices towards COVID-19 amongst Epidemiologists of India. Based on knowledge scores of the respondents, an overall correct rate of knowledge towards COVID-19 is 92.40%. The high rate of knowledge about COVID-19 among respondents is due to wide initiatives (country wide lockdown, public exposure to the information) taken by the government of India and media for bringing public awareness about COVID-19 from the start of outbreak. These studies were conducted in main phase of COVID-19 outbreak where people got exposed to the lot information about the disease. In our study, less knowledge was reported about virus transmission (not transmitted through air).The recent evidence suggest that airborne transmission may be possible in specific circumstances and settings in which procedures or support treatments that generate aerosols are performed; i.e. endotracheal intubation, bronchoscopy, open suctioning, administration of nebulised treatment, Manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator,non-invasive positive-pressure ventilation, tracheostomy and cardiopulmonary resuscitation.[9] In our study, majority (99.20%) of the participants had show right practices to avoid spread of COVID-19. This may be due to vast broadcasting about

COVID-19 by the government of India and good knowledge of the respondents. Aarogya Setu is a mobile application developed by government of India to connect health services with the people of India to fight against COVID-19. In our study, 93.63% of the respondents are getting COVID-19 information and services from this application. Still, there is a need to promote awareness on use of Aarogya Setu application among general public of India. The study finding revealed that knowledge, perception and practice scores towards COVID-19 were high among epidemiologists aged between 31-35 years and Post graduate education level.

CONCLUSION

The study concludes that, respondents higher education level, and pursuing healthcare profession were positively associated with high knowledge, perception, and practices scores towards COVID-19. Even though majority of the respondents shown a good knowledge and right practices towards COVID-19 pandemic, still there was a gap in right perception towards underlying myths and facts about COVID-19. Providing circulating WHO myth busters through media or social networks can resolve underlying misconceptions about COVID-19 and improves the knowledge, perception and practice among epidemiologists. Due to the covid-19 pandemic and lockdown not possible to involve all state epidemiologists and District Epidemiologists of India is limitation of Study.

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