

Research Article

# Knowledge, Attitude and Practice towards COVID-19 among Social Media Users in an Engineering College, South India

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## A B S T R A C T

**Background:** COVID-19 pandemic has been affecting the global health system profoundly. Various measures have been taken to contain the disease spread. This study was conducted with the aim of assessing the knowledge, attitude and practices in relation to COVID-19 in social media users among college-going students.

**Methods:** A cross-sectional web-based study was conducted among the students of an engineering college in south India. The study questionnaire was adapted from an earlier study which included four segments to collect information regarding socio-demographic details, knowledge, attitude and practices regarding COVID-19. Descriptive statistics was employed and the results were expressed as numbers and percentages.

**Results:** A total of 252 engineering students took part in the study. 251 participants (99.6%) had knowledge about the symptoms of COVID-19 and 243 (96.4%) participants knew the methods of transmission of the virus. With regard to the attitude towards COVID-19, 246 (97.6%) individuals felt that taking adequate precautions will reduce disease transmission, and 179 (71.0%) individuals completely agreed with the government's decision to implement the lockdown. Regarding practices related to COVID-19, 214 (84.9%) individuals regularly disinfected their hands, 249 (98.8%) respondents wore a mask regularly, and 226 (89.7%) participants adhered to social distancing norms.

**Conclusion:** The respondents in this study who were social media users in an engineering college in south India had fairly good knowledge, displayed a positive attitude and followed responsible practices with regard to COVID-19. Promotion of knowledge and awareness about the right practices related to COVID-19 among the public is necessary to ensure the adoption of effective preventive behaviours.

**Keywords:** COVID-19, Knowledge, Attitude, Practices, College Students

## Introduction

A novel strain of coronavirus (SARS-CoV-2) was first detected in December 2019 in Wuhan, China after an outbreak of pneumonia of unknown etiology raised an alarm internationally.<sup>1</sup> The virus has now spread to over 218 countries around the world and the World Health Organization has declared it a “pandemic”.<sup>2</sup> 174,654,044 individuals world-wide have been afflicted with COVID-19 and among these, 157,965,654 individuals have recovered while it has been fatal for 3,759,793 as per the latest data.<sup>3</sup> In India, the first COVID-19 case was reported in Kerala on January 30, 2020.<sup>4</sup> The spread has accentuated rapidly to a scenario of 2,642,9395 confirmed cases, 1,47,830 active cases, and 10,157 fatalities in Kerala alone as of June 8, 2021.<sup>5</sup> It is vital that every individual understands the immensity of this pandemic. Therefore, public awareness and adherence to preventive measures play a major role in managing a crisis of this vastness.<sup>6</sup> Kerala has earned global repute for the ‘Break the Chain’ campaign and community education focusing on physical distancing, hand washing and using face masks.<sup>4</sup> Public enforcement, which is influenced by their Knowledge, Attitude and Practices (KAP) towards COVID-19, is essential for such initiatives to be successful.<sup>7</sup> There are only a limited number of studies on KAP towards COVID-19 that have been conducted in south India. KAP surveys collect information on what is known, believed, and done by a specific population. It provides information on the readiness of the society to accept the changes in behaviour imposed by the healthcare authorities which also helps to determine the type of intervention that would help to change misconceptions about the virus.<sup>8</sup>

This study was conducted in an engineering college in south India. The young students pursuing their professional degree might have a significant influence on the health and well-being of their families and friends. Furthermore, this population tends to be the maximum socially active group, both on social media and outside in the community. Hence their attitude and perceptions would have an impact on spread of COVID-19 pandemic. At the time of this study, public spaces were mostly visited by young adults as the colleges were still closed and online classes were implemented.<sup>10</sup> Considering the fact that these students have consistent access to the information regarding COVID-19 through online platforms, it is essential to assess if due attention is paid in understanding and adopting the guidelines issued.

## Materials and Methods

**Study Design:** This was a cross-sectional study conducted through an online questionnaire-based survey.

**Inclusion and Exclusion criteria:** All students enrolled in an engineering college in south India were included in the study.

**Study Population, Area and Period:** The target participants

of the study were the active social media users in an engineering college in south India. After obtaining approval from the Institutional Ethics Committee, the study was commenced. Data was collected over a period of four days.

**Sample Size Determination:** Based on the proportion of overall knowledge, attitude and practices about COVID-19 among social media users in Jammu and Kashmir (61%) observed in an earlier publication<sup>9</sup> and with 10% allowable error and 95% confidence interval, the minimum sample size came up to 245 for this study.

## Sampling Technique

Purposive sampling technique was employed to obtain data from among students enrolled in an engineering college in south India. 252 students enrolled in the college who were social media users gave informed consent to participate in the study.

## Study Questionnaire

The structured questionnaire used for this study was adapted from an earlier study conducted in a northern state of India.<sup>9</sup> Written permission was obtained from the authors after which necessary changes in language, style, and responses were done for the current study. This questionnaire included questions for gathering data on socio-demographic particulars, COVID-19 related knowledge, attitude, and practices in four different segments.

**Data Collection:** The study data was collected using an online survey through Google Forms. Course-specific WhatsApp groups were identified, and the study questionnaire was shared with the group members.

## Statistical Analysis

Descriptive statistics was employed in this study to summarise the responses regarding knowledge, attitude and practice toward COVID-19. Variables were summarised as frequency and percentage. All analyses were done using Microsoft Excel 2016.

## Results

### Socio-demographic Characteristics

Out of the total of 252 respondents, 158 (62.7%) were male and 94 (37.3%) were female. Majority (62.7%) were in the age group of 18-40 years. 87 (34.5%) participants were second-year students, 81 (32.1%) were final year students, 62 (24.6%) were second-year students, and 22 (8.7%) were first-year students. 161 (63.9%) respondents resided in urban areas while 91 (36.1%) resided in rural areas. 121 (48%) study participants reported having one or two family members aged above 60 years (Table 1).

### Knowledge of the Study Participants on COVID-19

All the study participants answered that they were aware

about COVID-19. 243 (96.4%) participants knew all the modes of transmission of this disease, and 177 (70.2%) respondents knew how to protect themselves from being infected. 251 (99.6%) participants were aware of the symptoms of the illness. 197 (78.2%) individuals knew the dedicated helpline number of the state. 237 (94%) respondents used newspapers, televisions, and social media to gain knowledge about COVID-19 (Table 2).

**Table 1. Socio-demographic Characteristics of the Study Participants (n= 252)**

Characteristics	Frequency (%)
<b>Age group (years)</b>	
<18	94 (37.3)
18-40	158 (62.7)
<b>Gender</b>	
Female	94 (37.3)
Male	158 (62.7)
<b>Year</b>	
1st year	22 (8.7)
2nd year	87 (34.5)
3rd year	62 (24.6)
4th year	81 (32.1)
<b>Region</b>	
East India	2 (0.8)
North India	4 (1.6)
Northeast India	2 (0.8)
South India	239 (94.8)
Western India	4 (1.6)
Central India	1 (0.4)
<b>Residence</b>	
Rural	91 (36.1)
Urban	161 (63.9)
<b>Number of family members</b>	
<3	10 (4.0)
3-5	211 (83.7)
6-8	26 (10.3)
>8	5 (2.0)
<b>Number of family members above the age of 60</b>	
0	122 (48.4)
1-2	121 (48.0)
3-4	6 (2.4)
>4	3 (1.2)

**Table 2. Knowledge regarding COVID-19 among Study Participants (n= 252)**

Knowledge	Frequency (%)
<b>Do you know about COVID-19?</b>	
Yes	252 (100)
No	0 (0)
<b>Where did you first hear about COVID-19?</b>	
Newspaper	27 (10.7)
Others (NGO/announcements)	11 (4.4)
Social media	150 (59.5)
TV	64 (25.4)
<b>Where was the first case of COVID-19 reported in?</b>	
China	250 (99.2)
India	2 (0.8)
Saudi	0 (0)
Italy	0 (0)
<b>How does COVID-19 transmit?</b>	
<1m distance	3 (1.2)
Touch	1 (0.4)
Sneezing	5 (2.0)
All of the above	243 (96.4)
<b>Do you know how to prevent COVID-19 infection?</b>	
Yes	177 (70.2)
No	1 (0.4)
Not fully sure	71 (28.2)
Cannot be prevented	3 (1.2)
<b>What can happen to a person suffering from COVID-19?</b>	
ICU care for those with serious medical illness	32 (12.7)
Few may need hospitalisation	12 (4.8)
No treatment maybe required	2 (0.8)
All of the above	206 (81.7)
<b>In which age group, does COVID-19 spread?</b>	
All age	239 (94.8)
Children	1 (0.4)
Elderly	12 (4.8)
Pregnant	0 (0)

<b>What are the symptoms of COVID-19?</b>	
Fever	1 (0.4)
Cough	0 (0)
Shortness of breath	0 (0)
All the above	251 (99.6)
<b>Do you know whom to contact if you show symptoms of COVID-19?</b>	
Yes	236 (93.7)
No	16 (6.3)
<b>Do you know the COVID-19 helpline number of your state?</b>	
Yes	197 (78.2)
No	55 (21.8)
<b>Where do you think COVID-19 treatment is available?</b>	
Government hospitals	40 (15.9)
Private hospitals	1 (0.4)
Private clinics	1 (0.4)
1 and 2	210 (83.3)
<b>Which are the COVID-19 online tracking applications?</b>	
Worldometer	5 (2.0)
HealthLyked COVID-19	6 (2.4)
GO CORONA GO	0 (0)
Aarogya Setu	137 (54.4)
All of the above	104 (41.3)
<b>Is there any treatment for COVID-19?</b>	
Yes	67 (26.6)
No	97 (38.5)
Not sure	88 (34.9)
<b>Which speciality is vital for COVID-19?</b>	
Medicine	160 (63.5)
Surgery	1 (0.4)
Community medicine	85 (33.7)
Anaesthesia	6 (2.4)
<b>What are the sources of awareness regarding COVID-19?</b>	
Newspaper	5 (2.0)
Television	2 (0.8)
Internet	8 (3.2)
All of the above	237 (94.0)

**Table 3. Attitude regarding COVID-19 among Study Participants (n=252)**

Attitude	Frequency (%)
<b>Are you worried that someone you know may have an infection and you are not aware of it?</b>	
Yes	60 (23.8)
No	84 (33.3)
Sometimes	108 (42.9)
<b>What do you feel is the nature of the disease?</b>	
Fatal	26 (10.3)
Mild	69 (27.4)
Serious	131 (52.0)
Don't know	26 (10.3)
<b>Do you agree with the government's decision of declaring lockdown?</b>	
Completely agree	179 (71.0)
Somewhat agree	69 (27.4)
Wrong decision	2 (0.8)
Don't know	2 (0.8)
<b>Do you think that the government's initiatives to prevent COVID-19 are adequate?</b>	
Yes	104 (41.3)
No	97 (38.5)
Don't know	51 (20.2)
<b>Do you think the lockdown was helping in reducing the number of cases?</b>	
Yes	202 (80.2)
No	32 (12.7)
Don't know	18 (7.1)
<b>Do you feel there is a need for another lockdown so as to reduce new cases of COVID-19?</b>	
Yes	139 (55.2)
No	70 (27.8)
Don't know	43 (17.1)
<b>Do you feel that taking precautions such as hand washing, isolation, quarantine, social distancing, and wearing a mask will reduce the transmission?</b>	
Yes	246 (97.6)
No	3 (1.2)

Don't know	3 (1.2)
<b>If you or your close ones are having COVID-19 symptoms, what will you do?</b>	
Go to hospital	68 (27.0)
Treat at home using home remedies	17 (6.7)
Nothing	1 (0.4)
Isolate/quarantine	166 (65.9)
<b>What do you think is better for COVID-19 infection suspects?</b>	
Home quarantine	134 (53.2)
Administrative quarantine	60 (23.8)
Isolation	53 (21.0)
Others	5 (2.0)
<b>Do you feel wearing a cotton mask/ triple-layer mask will protect you from COVID-19?</b>	
Yes	80 (31.7)
No	28 (11.1)
Maybe	138 (54.8)
Don't know	6 (2.4)
<b>Have you looked for information on how to wear a mask correctly?</b>	
Yes, I have	149 (59.1)
No, I haven't	20 (7.9)
I know how to	53 (21.0)
Partially looked for	30 (11.9)
<b>Do you think it was difficult to get essential commodities in your area?</b>	
Yes	20 (7.9)
No	161 (63.9)
Sometimes	65 (25.8)
Don't know	6 (2.4)

### Attitudes towards COVID-19 among the Participants

A total of 131 respondents (52%) reported that COVID-19 is a serious disease, and 179 (71%) responded that they fully agreed with the decision made by the government regarding lockdown. 104 participants (41.3%) considered the initiatives taken by the administration as adequate and 202 (80.2%) respondents acknowledged that the lockdown was instrumental in reducing the number of cases. 139 (55.2%) individuals felt the need for another lockdown to reduce the case load, and 246 (97.6%) believed that hand washing, wearing masks, social distancing, and quarantine/ isolation are effective strategies to reduce transmission (Table 3).

**Table 4. Practices regarding COVID-19 among Study Participants (n=252)**

Practice	Frequency (%)
<b>Do you wash your hands with soap and water regularly?</b>	
Yes	214 (84.9)
No	2 (0.8)
Sometimes	36 (14.3)
<b>Are you wearing a mask to avoid transmission?</b>	
Yes	249 (98.8)
Sometimes	3 (1.2)
<b>Are you following the guidelines given by the authority for lockdown?</b>	
Completely follow	205 (81.3)
Somewhat follow	46 (18.3)
Don't know	1 (0.4)
<b>Have you been maintaining social distancing?</b>	
Yes	226 (89.7)
No	1 (0.4)
Sometimes	25 (9.9)
<b>Do you keep a track of the trend, the disease is taking?</b>	
Yes	148(58.7)
No	24 (9.5)
Sometimes	79 (31.3)
Don't remember	1 (0.4)
<b>What did you prefer to do in lockdown?</b>	
Stayed at home	247 (98.0)
Went to work	5 (2.0)
<b>How did you spend your time during lockdown?</b>	
Sleep	34 (13.5)
Went to work	2 (0.8)
New hobby	81 (32.1)
Played games online	51 (20.2)
Worked from home	84 (33.3)
<b>Did you keep any food reserve at home during lockdown, and for how many days?</b>	
1-3 days	87 (34.5)
1 week	119 (47.2)



1 month	45 (17.9)
1 year	1 (0.4)
<b>Did your family take/ receive any support from the government during the lockdown period?</b>	
Yes	70 (27.8)
No	118 (46.8)
Not aware	55 (21.8)
Don't want to	9 (3.6)
<b>What would have been your plans if this lockdown had continued?</b>	
No plans	151 (59.9)
Support from government	34 (13.5)
Selling assets	6 (2.4)
Taking credit	3 (1.2)
Not applicable	58 (23)

### Practices related to COVID-19 among the Respondents

Among the participants, 249(98.8%) wore masks to prevent disease transmission, and 214 (84.9%) individuals regularly washed their hands with soap and water. 226(89.7%) respondents practised social distancing norms, 205(81.3%) individuals adhered to the guidelines issued by the authorities for the lockdown, and 247 (98%) participants preferred to stay at home during lockdown (Table 4).

### Discussion

To the best of our knowledge this is the first study on knowledge, attitude and practices regarding COVID-19 conducted among non-healthcare related college-students in the southern state of Kerala. We received completed responses from 252 participants within 4 days of circulation of the questionnaire. Most of the participants (62.7%) were between 18 and 40 years of age as the study was conducted among engineering college students. Regarding knowledge about COVID-19, majority of the participants gained information about COVID-19 through social media (59.5%) rather than the traditional sources like televisions and newspapers. This could be because our target population who were young adults, were the most active population on social media platforms. This is similar to a study conducted in Jammu and Kashmir where 61% of the respondents gained knowledge of COVID-19 through social media.<sup>9</sup> Almost all participants were aware of the symptoms of COVID-19 (99.6%) and majority of them (96.4%) knew all modes of transmission of the virus. Singh et al conducted a study involving 529 university students in India and reported that 91% knew about the symptoms of the illness while

68% had awareness about the modes of transmission from one person to another.<sup>10</sup> A study conducted in South Korea among 970 subjects by Lee et al observed that 85.1 % of the participants had knowledge about the symptoms of COVID-19 while 93.2% knew about the transmission modes.<sup>11</sup> The higher levels of knowledge with regards to symptoms and method of transmission in the current study could be due to the fact that the participants were social media users and this information is easily available on online platforms. However, only a few of them (38.5%) were aware that there is no definite treatment for the same, whereas in a similar study conducted in Bangladesh, 80.7% of respondents were aware that there is only supportive treatment for COVID-19 infection.<sup>12</sup> Even though the study was conducted among non-healthcare related college students, a good percentage of them (63.5%) knew that Medicine is the vital-specialty for COVID-19. More than half of the respondents (54.4%) knew only about Aarogya sethu app as an online COVID-19 tracking application which could be attributed to the government encouraging individuals to use this indigenously developed app.

Regarding the attitude towards COVID-19, only 10% of the participants considered it as a fatal disease and 23.8% of them were worried that someone they knew may contract the infection and maybe asymptomatic. In a similar study conducted during the initial months of the spread of this disease in India, 39% of the respondents considered it a fatal disease and 36% of them were worried that someone they knew may have an infection.<sup>9</sup> The worry factor might have reduced in the population over the months owing to increasing awareness of better recovery rates. 71% of the participants completely agreed with the government's decision of declaring lockdown, which is similar to an earlier study where 78% of the respondents were in agreement with this decision.<sup>9</sup> 55.2% of the participants felt a need for another lockdown to reduce new cases of COVID-19. Some participants reported having to face difficulties during the lockdown. 7.9% of the respondents found it difficult to get essential commodities in their locality, 68.7% reported that their studies had been affected and 57.9% had their family's monthly income affected due to lockdown. About 13.5% of the study subjects would have relied on government support, while 2.4% were planning to sell assets and 1.2% were planning to take credits if lockdown had continued.

On evaluating the practices towards COVID-19, 84.9% of the participants regularly washed their hands with soap and water whereas, a similar study conducted among university students of the United Arab Emirates reported that 99.4% of their participants used soap and water for handwashing.<sup>13</sup> In our study 98.8% of the participants used face masks to avoid transmission of the disease, while in an earlier study, only 90.4% of the respondents

used a face mask.<sup>13</sup> A large multinational survey involving 71890 participants from across 22 nations observed that 82% of the participants reported that they wore a face mask in crowded places, however only 52% wore a mask when they step out in general especially to places that are not crowded.<sup>12</sup> 81.3% of our participants reported that they followed guidelines from the government related to COVID-19, which is similar to an earlier study where 88.4% of the participants obeyed all government rules.<sup>12</sup> Majority of the participants (89.7%) in our study maintained social distancing, whereas a similar study reported that 95.4% of their participants practised social distancing.<sup>13</sup> An online cross-sectional survey conducted in Yemen among 1231 individuals noted that 87.7% of the respondents reported adherence to preventive behaviours, which is in alignment with our study findings.<sup>14</sup> Most of the participants (98%) preferred to stay at home during the lockdown; 13.5% spent their time sleeping, and 20.2% spent it by playing online games. This indicates a lack of physical activity in these young individuals, which can prove detrimental if continued for an extended period of time.<sup>15</sup>

### Limitations

This study has some limitations. Since this is a cross sectional study, causal inferences may not be established. Also, since it employs a self-reported questionnaire study, it would be subject to bias.

### Conclusion

Our findings suggest that respondents in this study, who were social media users among non-healthcare related college-going students from Kerala, displayed good knowledge, positive attitude and followed responsible practices related to COVID-19 as compared to other studies from India and across the world. This study points to the role of continued health education programmes, especially on social media in ensuring that the public follows safe and informed practices to keep this pandemic in check. Further studies on knowledge, attitude and practices among specific subgroups in the society are essential to identify the gaps in knowledge and patterns of behaviour, which need to be addressed through tailored interventions.

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### References

- Mackenzie JS, Smith DW. COVID-19: a novel zoonotic disease caused by a coronavirus from China: what we know and what we don't. *Microbiol Aust.* 2020;41(1):45. [PubMed] [Google Scholar]
- Kumar S, Singh R, Kumari N, Karmakar S, Behera M, Siddiqui AJ, Rajput VD, Minkina T, Bauddh K, Kumar N. Current understanding of the influence of environmental factors on SARS-CoV-2 transmission, persistence, and infectivity. *Environ Sci Pollut Res.* 2021 Feb;28(6):6267-88. [PubMed] [Google Scholar]
- Worldometer [Internet]. COVID Live Update: 174,654,044 Cases and 3,759,793 Deaths from the Coronavirus; [cited 2021 Jun 9]. Available from: <https://www.worldometers.info/coronavirus/>
- Menon JC, Rakesh PS, John D, Thachathodiyl R, Banerjee A. What was right about Kerala's response to the COVID-19 pandemic? *BMJ Glob Health.* 2020 Jul;5(7):e003212. [PubMed] [Google Scholar]
- Kerala State Disaster Management Authority [Internet]. 2021 [cited 2021 Feb 24]. Available from: <https://sdma.kerala.gov.in>
- Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA, Bandari DK. Knowledge and Perceptions of COVID-19 Among Health Care Workers: Cross-Sectional Study. *JMIR Public Health Surveill.* 2020 Apr 30;6(2):e19160. [PubMed] [Google Scholar]
- Al-Hanawi MK, Angawi K, Alshareef N, Qattan AM, Helmy HZ, Abudawood Y, Alqurashi M, Kattan WM, Kadasah NA, Chirwa GC, Alsharqi O. Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Front Public Health.* 2020 May 27;8:217. [PubMed] [Google Scholar]
- Azlan AA, Hamzah MR, Sern TJ, Ayub SH, Mohamad E. Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *PLoS One.* 2020 May 21;15(5):e0233668. [PubMed] [Google Scholar]
- Dkhar SA, Quansar R, Saleem SM, Khan SM. Knowledge, attitude, and practices related to COVID-19 pandemic among social media users in J&K, India. *Indian J Public Health.* 2020;64(6):205. [PubMed] [Google Scholar]
- Singh JP, Sewda A, Shiv DG. Assessing the Knowledge, Attitude and Practices of Students Regarding the COVID-19 Pandemic. *J Health Manag.* 2020 Jun;22(2):281-90. [Google Scholar]
- Lee M, Kang B-A, You M. Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. *BMC Public Health.* 2021 Feb;21(1):295. [PubMed] [Google Scholar]
- Ferdous MZ, Islam MS, Sikder MT, Mosaddek AS, Zegarra-Valdivia JA, Gozal D. Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. *PLoS One.* 2020;15(10):e0239254. [PubMed] [Google Scholar]
- Hasan H, Raigangar V, Osaili T, Neinavaei NE, Olaimat

- AN, Aolymat I. A Cross-Sectional Study on University Students' Knowledge, Attitudes, and Practices Toward COVID-19 in the United Arab Emirates. *Am J Trop Med Hyg.* 2021 Jan 6;104(1):75-84. [PubMed] [Google Scholar]
14. Alrubaiee GG, Al-Qalah TA, Al-Aawar MS. Knowledge, attitudes, anxiety, and preventive behaviours towards COVID-19 among health care providers in Yemen: an online cross-sectional survey. *BMC Public Health.* 2020 Oct;20(1):1541. [PubMed] [Google Scholar]
15. Füzéki E, Groneberg DA, Banzer W. Physical activity during COVID-19 induced lockdown: recommendations. *J Occup Med Toxicol.* 2020 Aug;15(1):25. [PubMed] [Google Scholar]