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**Knowledge, attitude and practice related to COVID-19 among people- A
descriptive survey**

Cover Page Footnote

My sincere thanks to all the participants

Knowledge, attitude and practice related to COVID-19 among people- A descriptive survey

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Abstract

Introduction: Corona virus can be deemed as one of the rapidly spreading viral infections. More than 200 countries in less than four months were infected. Findings of a study proved that insight of people in the community is remarkable to render care during pandemics. Characteristics that influence the people to adhere with sound healthy practices and desirable behaviors can be acquired by examining the level of awareness related to COVID-19 among people.

Objectives: The objectives of the study were to assess knowledge, attitude and practice related to COVID-19 among people; correlate the knowledge, attitude and practice scores related to COVID-19 among people; and associate the level of knowledge, attitude and practice related to COVID-19 with selected demographic variables. **Method:** Quantitative approach was solicited and a descriptive design was chosen for the present study. Permission was obtained from the Research Advisory Committee of the institution. An anonymous online survey, a cross sectional one was conducted. The inclusion criteria were: people living in India, participants aged 16-70 years having internet access, who can read and write English, who knew to fill Google forms and those who volunteer. A questionnaire was designed using Google forms which was semi- structured. **Results:** The findings revealed that the mean and mean percentage of knowledge, attitude and practice were 10.36 and 74, 5.083 and 84.7; and 7.331 and 91.6, respectively. It was found there was a significant positive correlation between knowledge and attitude ($r=0.140$, $p=.000$); knowledge and practice ($r=0.127$, $p=.000$); attitude and practice ($r=0.256$, $p=.000$). With regard to association, it was seen that gender had association with practice ($p=.003$) and attitude ($p=.000$). **Conclusion:** The study suggest consistent encouragement and reinforcement may help in extending the knowledge among the people.

Keywords: attitude, COVID-19, India, knowledge, practice.

Introduction

In Wuhan, China an infectious disease in 2019 was noted as corona virus (COVID-19) recognized initially in the month of December (WHO, 2020). On 30th January 2020 as the unforeseeable growth of COVID-19 transmitted worldwide, the World Health Organization (WHO) proclaimed it as a universal crisis (WHO, 2020b). The world has seen outbreaks of pandemics earlier with H1N1 in 2009, also Ebola and Polio in 2014, Zika in 2016 and Ebola again in the year 2019 (Centers for Disease Control and Prevention, 2014-16), WHO indicated COVID-19 as a pandemic after validating the breakout at frightening levels of

spread and intensity on March 11th 2020 (WHO, 2020). Corona virus can be deemed as one of the rapidly spreading viral infections. More than 200 countries in less than four months were infected (Lai et al., 2020). The disease and death toll of COVID-19 is hastily changing across the globe. According to Worldometer India, worldwide affected population with COVID-19 as on 05/05/2021 was 154,998,353; of which 3,241,164 have lost their lives. In India, the affected population was 20,665,148 and 226,188 have lost their lives. The position of India among other countries across the world was second in number with COVID-19 cases. The number of victims is steeply rising with distressing mortality rates.

The word 'corona' comes from Latin that denotes crown. It belongs to Beta corona virus family. It has a huge ribonucleic acid surrounded with positive, solitary

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filament. The virus is quite competent to transmit between humans by saliva or sputum with infected organisms, by suspension of fine solid particles or liquid droplets in air or another gas and by contact as well. It takes about 14 days or more breeding (Lai *et al.*, 2020). The high speed spread of infection is extended by the potential for transmission through asymptomatic or minimally symptomatic patients (WHO, 2020). People with diminished immunity due to disease or immunocompromised drugs and geriatric community exposed to a larger height of risk of infection. Elderly patients with ailments such as hypertension, diabetes, cardiac disease are vulnerable to develop respiratory failure. They may evolve with quick advancement to organ failure or in severe cases, may end up with death. Fever, dyspnea, dry cough are the predominant symptoms of COVID-19. Tiredness, head ache and body pain are the associated symptoms (Yang, Shang, & Rao, 2020).

Polymerase Chain Reaction (PCR), non-culture based laboratory tests, blood tests are considered as confirmative tests as furnished by WHO recommended laboratories. The blood tests encompass hematological, clinical chemistry analysis on clinical samples and respiratory samples include oropharyngeal and nasopharyngeal swabs, or sputum infected with virus. (WHO, 2020). Patients and vulnerable persons should be secluded to secure them and others. Antibiotics are not effective against it as it is virus, and the primary treatment is supportive therapy (Habibzadeh, & Stoneman, 2020). WHO escalates on crucial preventive measures that the general public should utilize. In order to sustain community health, primary prevention techniques like frequently washing hands with soap, maintaining public distance, restricting travel, detecting cases, tracing the contacts and quarantining were implemented by inter-professional ventures in all countries. Assessing the people's responsibility towards awareness and prevention is inevitable to effectuate success against COVID-19. It is obvious that only with the change in behaviors of people as preventive strategies can retention be accomplished.

The execution of the health protocols to limit the spread the virus is not perceived positively by the public at large. Instead of adhering to the protocol and motivating people in their surroundings, the reality observed is expression of agony and apprehension (Roy *et al.*, 2020) especially among the unaffected population. Nevertheless, to instill such health protocol in their activities of daily living, public's knowledge, attitude and practice with regard to COVID-19 should be assessed as it may influence them to a great extent (Tachfouti *et al.*, 2012). The learning obtained from previous studies during epidemic have suggested that the knowledge and attitude among people towards contagious diseases were connected with nervousness and emotional responses. These observations were found during outburst of SARS in 2003. Furthermore, the authors postulated that these responses can hasten the efforts to prevent the transmission of disease (Tao N, 2013).

The core of health prevention and promotion of public health can be primarily accomplished through the intellectual filaments of knowledge, attitude and practice. It entails a continuum of beliefs regarding the reason of disease and precipitating factors, symptom identification and accessible strategies of management (Szymona- Palkowsha *et al.*, 2016). COVID-19 beliefs stem from various sources. For instance, social media, former personal encounter and through Governmental propaganda. The precision of the aforesaid beliefs may ascertain non-identical habits regarding deterrence that can fluctuate among people. Decreased knowledge or false beliefs may lead to a potential risk factor. A study recommended that attitudes concerning measures stated by the Government contained the epidemic. (Zhang *et al.*, 2020). Furthermore, the authors communicated that elevated knowledge was significantly associated with increased positive attitudes regarding preventive enactments of COVID-19.

Inaccurate information coupled with baseless management of COVID-19 may exacerbate the transmission of disease and lead to futile prophylactic habits (Ioannidis, 2020). Exhaustive and productive attempts are essential to defeat COVID-19 in India. To achieve this, the health authorities are required

to outline norms and measures that are effortlessly understood. Aarogya Setu, is a mobile app introduced by Indian Ministry of Health and Family Welfare in association with health departments at state level. It renders particulars pertaining to COVID-19.

The victory or defeat of these attempts largely depends on the behavior or practice of the people though, national measures in tackling the outburst are propagated. Precisely, compliance of the people towards preventive measures greatly helps in impeding the transmission of disease. This compliance is tremendously influenced by the knowledge and attitude of the people toward COVID-19.

Findings of a study proved that insight of people in the community is remarkable to render care during pandemics (Chirwa, Sithole, & Jamu, 2019). Characteristics that influence the people to adhere with sound healthy practices and desirable behaviors can be acquired by examining the level of awareness related to COVID-19 among people (Podder et al., 2019).

Objectives of the study were to:

- Assess the knowledge, attitude and practice related to COVID-19
- Correlate the knowledge, attitude and practice scores related to COVID-19
- Associate the level of knowledge, attitude and practice related to COVID-19 with selected demographic variables

Materials and Methods

Quantitative approach was solicited and a descriptive study was chosen for the present study. Obtained permission from the Research Advisory Committee of the institution. An anonymous online survey, a cross sectional one was conducted. The inclusion criteria were: people living in India, participants aged 16-70 years having internet access, who can read and write English, who knew to fill Google forms and volunteering. A questionnaire was designed using Google forms which was semi- structured. The generated link was distributed to the people on social platform predominantly through WhatsApp. The data collection instruments used were a tool on assessing the knowledge, and attitude and a practice checklist.

The reliability coefficient was 0.839 for knowledge, 0.814 for attitude and 0.767 for practice checklist as computed by Spearman- Brown formula. All the tools were found to be reliable. The sample size calculated by alpha co-efficient with the power of 80% was 1278. However, 1513 respondents in total who submitted the responses within the period of collection of data were included in the study. The survey was conducted from 16 June 2020 to 31 August 2020.

The tool on knowledge began with the willingness to take part in the study. Maintaining anonymity and non-disclosure of the data were assured in the instruction column. Thereafter, it continued with knowledge section comprising of 15 items and first two items had ‘Yes’ and ‘No’ responses and item three through 15 had ‘True’, ‘False’ and ‘Don’t know’ responses. The scoring was done with ‘1’ for right answer and ‘0’ for wrong answer.

The attitude checklist encompassed six items with ‘Yes’ and ‘No’ responses. And the practice checklist constituted of eight items with ‘Yes’ and ‘No’ responses.

Results

The demographic characteristics of the respondents

Table 1
Frequency and Percentage Distribution of Characteristics of Respondents

	N=1513	
Demographic Variables	Frequency (f)	Percentage (%)
Age in Years		
< 20	347	22.9%
21 – 25	670	44.3%
26 – 30	232	15.3%
31 – 35	113	7.5%
36 – 40	66	4.4%
> 40	85	5.6%
Gender		
Male	365	24.1%
Female	1148	75.9%
Marital Status		
Unmarried	1130	74.7%
Married	381	25.2%
Others	2	0.1%
Education		

Schooling	114	7.5%
Graduate	1052	69.5%
Post Graduate	303	20.0%
Doctorate	44	2.9%
Occupation		
Unemployed	149	9.8%
Students	687	45.4%
Private Employee	586	38.7%
Govt. Employee	91	6.0%
Total Family Members		
1 – 2	75	5.0%
3 – 4	687	45.4%
5 – 7	751	49.6%
Place of Residence		
Rural	700	46.3%
Urban	813	53.7%

Table 1 reveals the respondents' demographic characteristics. It was found that majority 44.3% of them were of 21-25 years; 75.9% were females; 74.7% were unmarried; 69.5% were Graduates; 45.4% were students; 49.6% had 4-7 family members; and 53.7% were from urban place of residence.

Table 2
Frequency and Percentage Distribution of Item-Wise Knowledge Score of People Regarding COVID-19

N = 1513		
Statements	Frequency (f)	Percentage (%)
1. Know about corona	1478	97.7%
2. Know where to contact if any symptoms of COVID-19	1278	84.5%
3. COVID-19 infected persons do not have symptoms of a common cold like stuffed nose, sneezing and running nose	879	58.1%
4. Presently COVID-19 do not have a successful cure	715	47.3%
5. Most of the COVID-19 patients can be recovered by identifying early symptoms and supportive treatment	1398	92.4%
6. COVID-19 infection can occur by touching or consuming wild animals	740	48.9%
7. COVID-19 patients cannot transmit the disease to any others if the fever does not prevail	771	51.0%

8. It is through infected respiratory droplets do COVID-19 virus pass on to others	1430	94.5%
9. COVID-19 is airborne	606	40.1%
10. Wearing face masks prevents the infection of the COVID-19 virus	1363	90.1%
11. Preventive measures towards COVID-19 virus need not be observed by children and youngsters	779	51.5%
12. Refraining from crowded areas and use of common transportation helps in the prevention of COVID-19	1349	89.2%
13. Limitation of transmission of COVID-19 virus can be achieved by isolating and treating COVID-19 patients	1422	94.0%
14. Isolating oneself immediately if they have come in contact with infected people is essential for about 14 days	1472	97.3%

Table 2 display the descriptive analysis of knowledge component about COVID-19. The results illustrated that the people had more knowledge on item 1, 14 and 8 with the percentage 97.7, 97.3 and 94.5, respectively. On the contrary, people had less knowledge on item 9, 4 and 6 with the percentage 40.1, 47.3 and 48.9, respectively.

Table 3
Item-wise Analysis of Attitude of People Regarding COVID-19

N = 1513		
Statements	Frequency (f)	Percentage (%)
1. I fully agree that COVID-19 will be contained victoriously	1252	82.7%
2. India will succeed in the war in the case of COVID-19	1392	92.0%
3. The government is managing the crisis productively	1104	73.0%
4. Lockdown is the best measure to arrest the transmission of COVID-19	1430	94.5%
5. Lockdown has to be extended if the number of cases is going high	1285	84.9%

6. Media coverage gives huge exposure to the news about COVID-19	1228	81.2%
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Table 3 depicts the descriptive analysis of the attitude component about COVID-19. It was found that item 4 “Lockdown is the best measure to arrest the transmission of COVID-19” was scored highest with 94.5%.

Table 4
Item-wise Analysis of Practice of People Regarding COVID-19

N = 1513		
Statements	Frequency (f)	Percentage (%)
1. Avoided going to crowded places	1451	95.9%
2. Adhered with covering face mask while going out	1386	91.6%
3. Exercised washing hands with soap frequently	1487	98.3%
4. The outbreak of the COVID-19 pandemic resulted to utilize hand sanitiser frequently	1441	95.2%
5. Maintained social distancing	1491	98.5%
6. Covered mouth and nose with a handkerchief while sneezing/ coughing	1486	98.2%
7. Felt bounded with family during lockdown	1171	77.4%
8. Storing of foodstuffs and medicines are of good practice	1179	77.9%

Table 4 denotes the descriptive analysis of the practice component of COVID-19. It was found that 98.5% of the participants maintained social distancing and 77.4% spent time with family during the lockdown.

Table 5
Mean, Standard Deviation, Mean Percentage and Range of Knowledge, Attitude And Practice

N = 1513				
Variables	Mean	SD	Mean (%)	Range
Knowledge	10.36	1.699	74.0	0 – 14
Attitude	5.083	1.138	84.7	0 – 6
Practice	7.331	0.871	91.6	0 – 8

Table 5 demonstrates the mean, standard deviation and mean percentage of the knowledge, attitude

and practice. The mean and mean percentages of knowledge, attitude and practice were 10.36 and 74, 5.083 and 84.7; and 7.331 and 91.6, respectively.

Table 6
Correlation between Knowledge and Attitude of People Regarding COVID-19

N = 1513				
Variables	Mean	SD	Pearson’s Correlation	p-value
Knowledge	10.36	1.699	0.140**	.000
Attitude	5.083	1.138		

** → Significant at 0.01 level

Table 6 elucidates the correlation between knowledge and attitude. Here the p-value is less than the significance level .01; That is, there is a significant correlation between knowledge and attitude. Though the p-value was significant, the value obtained for correlation shows a weak correlation.

Table 7
Correlation between Knowledge and Practice of People Regarding COVID-19

N = 1513				
Variables	Mean	SD	Correlation	p-value
Knowledge	10.36	1.699	0.127**	.000
Practice	7.331	0.871		

Note** = Significant at .01 level

Table 7 explains the correlation between knowledge and practice is significant. Here the p-value is less than the significance level .01; That is, there is a significant correlation between knowledge and practice. Though the p-value was significant, the value obtained for correlation shows a weak correlation.

Table 8
Correlation between Attitude and Practice of People Regarding COVID-19

N = 1513				
Variables	Mean	SD	Correlation	p-value
Attitude	5.083	1.138	0.256**	.000
Practice	7.331	0.871		

Note** = Significant at 0.01 level

Table 8 interprets that the correlation between attitude and practice is significant. Here the p-value is less than the significance level .01; That is, there is a significant correlation between attitude and practice. Though

the *p*-value was significant, the value obtained for correlation displays a weak correlation.

Table 9
Distribution of Level of Knowledge, Attitude and Practice of People Regarding Covid-19

N = 1513

Variables	Frequency (f)	Percentage (%)
Knowledge		
Poor	7	0.5
Average	58	3.8
Good	703	46.5
Very Good	745	49.2
Attitude		
Poor	21	1.4
Average	132	8.7
Good	656	43.4
Very Good	704	46.5
Practice		
Poor	3	0.2
Average	11	0.7
Good	200	13.2
Very Good	1299	85.9

Table 9 communicates the level of study variables among the respondents. Majority (49.2%) had very good knowledge; 46.5% had very good attitude and 85.9% had very good practice towards COVID-19.

Table 10
Association between Knowledge of People on Covid-19 and Demographic Variables

N = 1513

Demographic Variables	Mean	SD	F-value	df	<i>p</i> -value
Age (Years)					
Up to 20	10.28	1.598	1.268	5	.275
21 - 25	10.46	1.805			
26 - 30	10.15	1.606			
31 - 35	10.50	1.758			
36 - 40	10.26	1.639			
> 40	10.45	1.376			
Gender					
Male	10.25	1.786	2.080	1	.149
Female	10.40	1.669			
Marital Status					
Unmarried	10.38	1.683	0.217	1	.641
Married	10.32	1.748			
Education					

Table 10 Cont...
Association Between Knowledge of People on Covid-19 and Demographic Variables

Demographic Variables	Mean	SD	F-value	df	<i>p</i> -value
Schooling					
Graduate	10.41	1.659	2.369	3	.069
Post Graduate	10.36	1.805			
Doctorate	10.27	1.676			
Occupation					
Unemployed	10.14	1.867	1.862	3	.134
Students	10.41	1.781			
Private Employee	10.33	1.579			
Government Employee	10.55	1.485			
Total Family Members					
1 - 2	9.947	1.593	2.661	1	.070
3 - 4	10.43	1.628			
5 - 7	10.34	1.766			
Place of Residence					
Rural	10.28	1.856	2.897	1	.089
Urban	10.44	1.547			

Table 10 displays that there is no association found between knowledge and selected demographic variables.

Table 11
Association between Attitude and Demographic Variables

N = 1513

Demographic Variables	Mean	SD	F-value	df	<i>p</i> -value
Age (Years)					
Up to 20	5.205	0.992	1.718	5	.127
21 - 25	5.182	1.015			
26 - 30	4.931	1.359			
31 - 35	4.673	1.392			
36 - 40	5.000	1.228			
> 40	4.835	1.317			
Gender					
Male	4.858	1.310	12.25**	1	.000
Female	5.155	1.069			
Marital Status					
Unmarried	5.166	1.036	1.664	1	.197
Married	4.837	1.371			

Table 11 Cont...

Association between Attitude and Demographic Variables

Demographic Variables	Mean	SD	F-value	df	p-value
Education					
Schooling	5.193	1.029	0.362	3	.780
Graduate	5.128	1.111			
Post Graduate	4.878	1.259			
Doctorate	5.136	1.047			
Occupation					
Unemployed	5.154	1.031	1.307	3	.271
Students	5.135	1.104			
Private Employee	4.993	1.188			
Govt. Employee	5.154	1.210			
Total Family Members					
1 - 2	4.747	1.357	1.658	1	.191
3 - 4	5.055	1.164			
5 - 7	5.142	1.084			
Place of Residence					
Rural	5.169	1.116	3.540	1	.060
Urban	5.010	1.153			

Note** = Association is significant at 0.01 level

Table 11 exhibits that there is no association found between attitude and selected demographic variables except for gender.

Table 12

Association between Practice of People Regarding COVID-19 and Demographic Variables

N = 1513					
Demographic Variables	Mean	SD	F-value	df	p-value
Age (Years)					
Up to 20	7.369	0.848	1.414	5	.216
21 - 25	7.376	0.884			
26 - 30	7.224	0.879			
31 - 35	7.142	1.060			
36 - 40	7.379	0.576			
> 40	7.329	0.697			
Gender					
Male	7.192	1.072	8.568**	1	.003
Female	7.375	0.792			

Table 12 Cont...

Association between Practice of People Regarding COVID-19 and Demographic Variables

Demographic Variables	Mean	SD	F-value	df	p-value
Marital Status					
Unmarried	7.356	0.872	0.515	1	.473
Married	7.257	0.866			
Education					
Schooling	7.211	0.917	1.186	3	.314
Graduate	7.356	0.884			
Post Graduate	7.287	0.822			
Doctorate	7.364	0.750			
Occupation					
Unemployed	7.295	0.818	0.581	3	.627
Students	7.378	0.859			
Private Employee	7.300	0.899			
Govt. Employee	7.231	0.857			
Total Family Members					
1 - 2	7.453	0.684	2.536	1	.080
3 - 4	7.357	0.862			
5 - 7	7.296	0.895			
Place of Residence					
Rural	7.290	0.948	2.568	1	.109
Urban	7.367	0.798			

Note ** = Association is significant at 0.01 level

Table 12 demonstrates that there is no association found between practice and selected demographic variables except for gender.

Discussion

The evolution and transmission of COVID-19 are frightening the entire universe and is the current community health crisis. The present study findings revealed the mean percentage of overall right answers for knowledge was 74%, 84.7% had a good attitude and 91.6% had a good practice. These findings are supported by a study done on knowledge, attitude, and practice of Bihar's residents towards the COVID-19 pandemic: it was found overall right answers 79.0% on the knowledge aspect denoting that majority were knowledgeable about COVID-19, 43.8% had a positive attitude and 66.4% had adequate practices

(Watsala, 2020). However, the present study showed a marked difference in attitude and practice. There are many other studies supported by these findings. The majority (93%) of respondents reported having adequate knowledge about symptoms and spread in a study conducted among Chinese residents (Zhong BL, Luo W, & Li HM, 2020). A study from India reported the correct response about symptoms (86.7%) among medical students (Maheswari S, Gupta P, & Sinha, 2020).

A similar study that was conducted among worldwide doctors and allied health workers found that 79.6% and 70.6%, respectively knew the symptoms (Bhagavathula AS, Aldhaleei WA, & Rahmani J, 2020). The lowest knowledge score (36.7%) was found concerning animal food eating as there is no proof for animal food or food packaging connected to COVID-19 spread right now (WHO, 2019) and in the present study, the score obtained was 48.9%.

Furthermore, a study conducted on knowledge, attitude and practice at Hausa, Nigeria among 886 participants showed that 65.38% had good knowledge, 71.45% had a good attitude and 65.04% had a good practice (Maryam Abdulrazaq Habib, Farouq Muhammed Dayyab, *Garba Iliyasu, 2021). Another online-based study on knowledge, attitude and practice regarding COVID-19 at Bangladesh among 2017 respondents reported that 48.3% of participants had good knowledge; 99.5% in females and 98.3% in males had a positive attitude; and 81.8% in females and 73.5% in males agreed to have a good practice (Zannatul Ferdous, Md. Saiful Islam, Md. Ferdous et al., 2020).

The present study findings projected a positive correlation between knowledge and attitude ($r = 0.140$, $p = .000$); knowledge and practice ($r = 0.127$, $p = .000$); attitude and practice ($r = 0.256$, $p = .000$). These findings reflect the significance of elevating the public's knowledge on COVID-19 may result in the growth of their positive practices and attitudes related to the disease. This is consistent with a study that indicated a positive significant correlation between attitude ($r=0.234$; $p = .008$) and practice ($r=0.227$, $p = .010$) (Watsala, 2020).

Demographic factors, particularly the association between gender and practice; and gender and attitude were significant in this present study. It was found consistent with previous studies where gender had an association with knowledge, attitude and practice.

Conclusion

It is evident from the findings of the study that people had good knowledge about COVID-19 and in the point of fact, attitude and practice scores were on the top of knowledge scores. Moreover, it adds that good knowledge is correlated with a favourable attitude and meticulous practices towards COVID-19 which reflects the health literacy of the population.

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