



Assessment of the Knowledge, Attitudes and Practices (KAP) of Indian Population towards COVID-19 outbreak

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ABSTRACT

BACKGROUND: India has taken unprecedented and stringent preventive and precautionary measures against COVID-19 to control its spread, safeguard citizens and ensure their well-being. Public adherence to preventive measures is influenced by their knowledge and attitude toward COVID-19. This study investigated the knowledge, attitudes, and practices of the Indian general population toward COVID-19, during the pandemic.

OBJECTIVE: We aimed to assess the Knowledge, Attitudes and Practices (KAP) of Indian population towards COVID-19 outbreak.

METHOD: This is a cross-sectional study, using data collected via an online self-reported questionnaire, from 386 participants. To assess the differences in mean scores, and identify factors associated with knowledge, attitudes, and practices toward COVID-19, the data were run through univariate and multivariable regression analyses, respectively.

RESULTS: Our study identified that, although people reported adequate knowledge by identifying expected symptoms and virus transmission ways in COVID-19 disease.

The majority of the study participants were knowledgeable about COVID-19. The mean COVID-19 knowledge score was 13.34 (SD = 2.79, range: 5–19), indicating a high level of knowledge. However, the results showed that men have less knowledge, less optimistic attitudes, and less good practice toward COVID-19, than women. Knowledge score was 70.25%. Attitude score was 86.22%, indicating optimistic attitudes. Practice score was 67.4%, indicating good practices. Overall KAP score was 74.62%. Most common primary source of information was TV news. 81.6 % heard about Aarogya setu mobile application & 62% found it useful.

CONCLUSION: We suggest that public policies should be formed in a way to improve knowledge among the general population by disseminating the information timely and ensuring compliance with public control measures by the population.

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I. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is defined as an illness caused by a novel coronavirus, now called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV). COVID-19 is an emerging respiratory infection that was first discovered in December 2019, in Wuhan city, Hubei Province, China.^[1] COVID-19 is characterized by rapid transmission, and can occur by close contact with an infected person.^[5-9] By the end of January 2020, the World Health Organization (WHO) announced a public health emergency of international concern and called for the collaborative effort of all countries, to prevent its rapid spread. Later, the WHO declared COVID-19 a “global pandemic”.^[11]

India have not experienced similar situation in times of SARS or MERS diseases until now. Besides that, the public healthcare systems are not prepared to this epidemic in many parts of India.

In this regard, there are limited studies on knowledge and attitudes during epidemics in India. For instance, during the recent outbreaks of H1N1, Nipah and dengue^[9], low levels of participation and commitment to the imposed control measures were reported. It should be noted that the inoperability of government measures is probably due to the fact that, these epidemics only affected certain geographical areas, given the climatic conditions that favor those above mentioned air vectors.^[9-11]

India after confirming its first case of Covid-19 in 30 Jan 2020. The government response has become more forceful as the days go by. In particular, strategies were implemented such as: social distancing, continuous hygiene, use of face shields, limiting public vehicle traffic, locking down public places that do not dispense essential products, and reducing traffic hours to certain daily hours.^[12]

On 24 March 2020, the government imposed a nationwide curfew to restrict people movements for most of the day hours. Despite the unprecedented national measures in combating the outbreak, the success or failure of these efforts is largely dependent on public behavior. Specifically, public adherence to preventive measures established by the government is of prime importance to prevent the spread of the disease. Adherence is likely to be influenced by the public's knowledge and attitudes toward COVID-19. Evidence shows that public knowledge is important in tackling pandemics.^[13,14] By assessing public awareness and knowledge about the coronavirus, deeper insights into existing public perception and practices can be gained, thereby helping to identify attributes that influence the public in adopting healthy practices and responsive behavior.^[15] Thus, this study aims to investigate the knowledge, attitudes and practices (KAP) of Indian residents, toward COVID-19 during the pandemic spike. The findings of this study are expected to provide useful information to policymakers, about KAP among the Indian population, at this critical time. The findings may also inform public health officials on further public health interventions, awareness, and policy improvements pertaining to the COVID-19 outbreak.

Abbreviations: COVID-19, Coronavirus disease 2019; KAP, Knowledge, attitude and practice; SARS, Severe acute respiratory syndrome; MERS, Middle East Respiratory Syndrome; WHO, World Health Organization; CDC, Centers for Disease Control and Prevention; MOH, Ministry of Health.

II. MATERIALS AND METHOD

Study design & data collection:

This is a cross-sectional survey conducted from 10th May to 12th Jul 2020 in India. As Community-based survey was not feasible due to nationwide lockdown. A 34-item questionnaire was developed using Kobo toolbox. Information published in literature including publications available on WHO and the Centers for Disease Control and Prevention (CDC) was utilized at large. A Pilot study was conducted to understand the barriers faced by participants and the chronology of the questionnaire. The questionnaire was made available to the participants through emails and social networking platforms such as WhatsApp & Facebook. The cover page of the questionnaire includes a consent form, a declaration of confidentiality, and anonymity. Participants with age more than 18 years who can understand the content of the survey and willing to participate were included.

Questionnaire and scoring:

The questionnaire consists of two parts - Demographic details and KAP study. Demographic Variables includes; Sex (Male, Female & Other), Age (18-29, 30-44, 45-59 or > 60 years), Marital Status (Married, Unmarried, Divorcee/Separated & Window/Widower), Education level (Post Graduate and above, Graduate, Senior secondary, Matric, Middle school, Primary school, no education), Occupation (Government services, Private services, Homemaker, Own business, Farmer, Student, Unemployed, Retired), Medical/Paramedical professional or not.

The knowledge section consisted of 16 questions regarding clinical symptoms, prevention, and control of disease (K1-K16). A correct answer was given 1 point and an incorrect answer was given 0 point. Overall knowledge scores ranged from 0-16.

Evaluation of attitude of the general public was done by 6 Questions (A1-A6) comprising questions assessing viewpoint on social distancing, control of COVID-19, and lockdown to prevent the spread of COVID-19. Regarding the assessment of practice, the question was composed of 6 questions (P1-P6): preventive measures during the lockdown. Similar scoring pattern as knowledge was kept.

Statistical analysis:

The data were analysed via statistical Package for the Social Sciences (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22 Armonk, Chicago, Illinois: IBM Corp). Mean with standard deviation was calculated for descriptive analysis and the number with percentage was calculated for categorical variables. Knowledge, attitude, and practice score were compared by demographics with chi-square or Fischer's exact test as appropriate. Multivariate linear regression analysis was used to establish the relationship between demographic variables as independent variables and KAP as the outcome variable.

Ethical Clearance: The study was cleared by the Institutional Ethical Committee.

III. RESULTS

Study population characteristics

A total of 34 questionnaires were completed with an overall response rate of 99.5%. The details of demographic characteristics were presented in (Table 1). A large proportion of male respondents (71%) were found. The leading age band was 30-44 years, accounting approximately 47.7% of both the genders.

Additionally, Total of 258 (66.9%) subjects holds a degree of graduate or above, 128 (33.1%) pursues

as a Primary school or above. 259 (67.1%) were married, 109 (28.2%) were unmarried. 114 (29.5%) were working in govt sector, 79 (20.5%) in private sector. 92 (23.8%) were medical professionals.

Table 1: Age Distribution of study population

Age group	Male (n= 274) % of males	Female (n= 112) % of females	All (n=386) %
18-29 years	69 (25.2%)	39 (34.8%)	108 (28.0%)
30-44 years	142 (51.8%)	42 (37.5%)	184 (47.7%)
45-59 years	32 (11.7%)	20 (17.9%)	52 (13.5%)
>60 years	31 (11.3%)	11 (9.8%)	42 (10.9%)

Knowledge Score related to COVID-19

Overall knowledge score was 70.25%. Univariate analysis with knowledge level significantly varies across age, gender, education, and occupation. TV news (77.97%) was the most common source of information followed by WhatsApp (44.0%), Ministry of health & family welfare data (32.12%), Medical/ paramedical professional (24.61%). 315 (81.6%) people heard about Aarogya setu mobile application and 62.17% find it useful. Fever (96.6%) was most common reported symptom answered followed by dry cough (91.4%), breathlessness (70.2%). Significant difference between graduates and above vs 12th & below was observed about reporting of running nose as symptom of COVID-19 (P value = 0.049).

How useful did you find the Aarogya Setu application

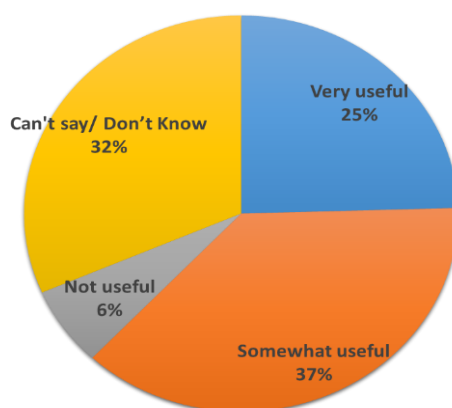


Fig 1: How useful did you find the Aarogya Setu Application

Attitude Score related to COVID-19

The overall correct rate in attitude was 86.22%. Nearly (73.83%) respondents believed that COVID-19 can be successfully controlled. 88.86% believed that public lockdown is an effective measure to tackle COVID-19. 80.56% said that the government & health facility has the ability to stop the epidemic. 95.33% believed that washing hands frequently can lower the risk of COVID-19 infections. 98.18% believed that social distancing is essential to stop the virus spread. Significant difference of opinion between graduates and above vs 12th & below was observed about social distancing is essential to stop the virus spread. (P value = 0.008). Also difference in opinion on the health services have ability to stop the epidemic was observed between graduates & above vs 12th & below with graduates believing that health services have ability to stop pandemic. (P value = 0.002)

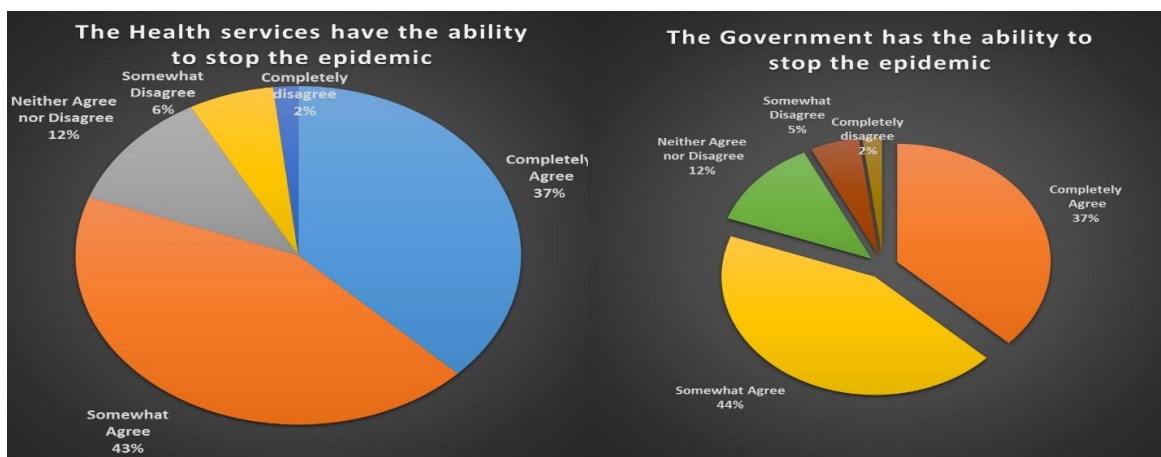


Fig 2: Health services ability to stop epidemic

Fig 3: Govt has ability to stop epidemic

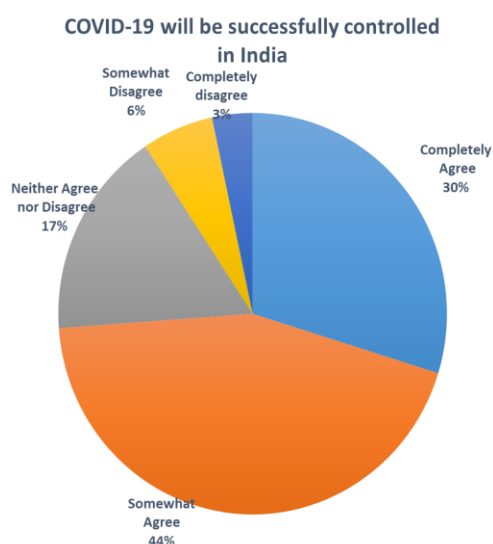


Fig 4: COVID 19 will be successfully controlled in India

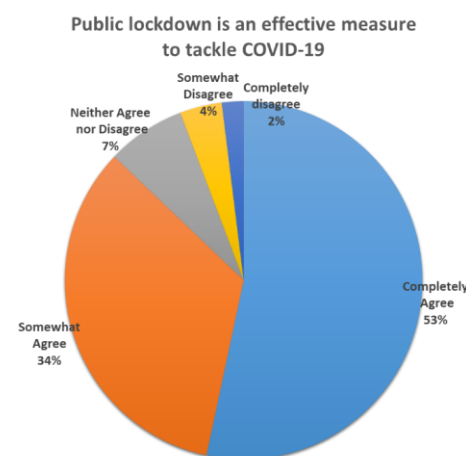


Fig 5: Public lockdown is an effective measure to tackle COVID-19

Practice Score related to COVID-19

Based on results overall practice score was 67.14 %. In the study, during lockdown 23.57% often left the house while 60.88% left house sometimes. 69.17% always worn mask while leaving home, 28.75% worn mask sometimes. 51.54% people spent 20-40 sec time for washing hands. 82.90% preferred soap and water for washing hands compare to sanitizer and water. 59.58% avoided touching eyes, nose, and mouth with unwashed hands always. 73.83% covered their mouth while coughing/ sneezing. Graduate and above followed cough etiquette (91.5%) as compared to 12th std and below (38.3%). Graduates and above left house less frequently as compare to 12th std and below. (P value = 0.002)

IV. DISCUSSION

Since the outbreak, Corona virus had brought chaos to lives and economics around the world. Encouragement of public to adopt precautionary behaviors for containment strategies as knowledge attitude and practice is foreground for public cooperation and backbone for implementing any health policy.

Based on our findings, the study significantly consists males, married and well-educated population. The overall 70.25% of knowledge score was higher and unanticipated. Essentially because the online survey was after the ubiquitous mass media coverage on rampant caused by COVID-19 to global giants i.e. (America, Europe, China) and through effective health communication for sustainable adoption of preventive measures by Ministry of Health & family welfare, Government of India. Participants were aware regarding clinical symptoms, transmission, prevention and control of disease. Multivariate analysis showed confounding factors (education level and occupation) as strong indicator of knowledge domain regarding COVID-19 which postulates the combination of better access to information and high education level leads to appropriate apprehension and comprehension of information on covid-19, consequent to better knowledge on COVID-19.

Therefore, government and public health policy-makers should recognize target populations for COVID-19 prevention and health education.

Fever 96.6% was most common symptom answered followed by dry cough 91.4 %, breathlessness 70.2%. 95.33% believed that washing hands frequently can lower the risk of COVID-19 infections. 98.18% believed that social distancing is essential to stop the virus spread. Participants were aware regarding clinical symptoms, transmission, prevention and control of disease. Encouragement of public is required to adopt precautionary behaviors for containment strategies.

In our study, for 77.97% of the participants, the most common source of information was from television. This was different from studies done by Pandey *et al.*^[16] (48.1%) and Wang *et al.*^[17] (93.5%) where the main source of information for the participants was through social media and internet, respectively. A study done by Erfani *et al.*^[18] showed that participants whose sources of information was from social media, scientific articles, and journals had a significant higher knowledge of the disease ($P \leq 0.001$) as compared to news media users who had significantly lower knowledge regarding the transfer routes and groups at higher risk regarding COVID-19 ($P = 0.006$). In our study, only (1.6%) of the participants had only primary education or less.

A significant (27.97%) of the studied population thought that the disease could not be spread by an asymptomatic carrier. This was in contrast to a study done by Abdelhafiz *et al.*^[19] where 81.8% of the population knew that the disease could be transmitted by asymptomatic carriers.

Despite inadequate knowledge, majority of participants were optimistic about disease control and India winning war against COVID-19 (73.83%). In a similar study done in China, 90.8% were confident about COVID control and 97.1% believed that China would win the war against COVID.^[20] The optimistic attitude of respondents could be attributed to IPC measures adopted by the Government of India. Even though overcrowding, poverty and cluster zones with inadequate hygiene and sanitation poses a major challenge for implementation, almost 88.85% respondents extended their support for lockdown and followed restrictive policies thus reflecting trust in political and scientific leadership as compared to study done by Kartheek AV *et al.*^[21] where 90% of the population extended their support for lockdown.

Despite the lockdown, around 84.45% of participants came out of their houses for either discharging their duties or buying essential commodities with all preventive measures as contrast to study conducted by Kartheek AV *et al.*^[21] where 80% of the population came out of houses for some work.

Though more than 92.99% respondents practiced frequent hand washing, only 51.54% followed recommended guidelines of washing hands for >20 secs, thus reflecting the discordance between information and implementation. A surveillance done in Hong Kong in early February 2020 revealed that non-pharmaceutical interventions like quarantine and isolation, social distancing, border restrictions, and behavioral changes in public were associated with reduced transmission of COVID-19.^[22]

KAP is foreground for public cooperation and backbone for implementing any health policy. Strength of the study is large sample size during the critical period of nationwide lockdown and COVID-19 outbreak. Our sample was perfectly balanced as both the genders were recruited which really made us to take effort as in India more telecom users are males. Considering that educational attainment and occupation are frequently considered proxy measures of socio-economic status. Significant association between demographics variables and KAP towards COVID-19, due to which we have overestimated rates of preventive practice and attitudes with the actual practice.

V. CONCLUSION

To conclude, majority of Indian population demonstrated good knowledge, positive attitude and good practice regarding COVID-19 pandemic. Furthermore, due to systemic approach and health communication strategies significant awareness and apprehension in knowledge, preventive strategies and optimistic attitude was assimilated general population. Other than that, government policy makers have worked well in targeting grass-root population having low level of education and non-professional workers and managed proactively on preventive measures against COVID-19.

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Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Table 2. Sociodemographic characteristics

Sociodemographic Characteristics				
Age group	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
18-29 years	69 (25.2%)	39 (34.8%)	0.037	108 (28.0%)
30-44 years	142 (51.8%)	42 (37.5%)		184 (47.7%)
45-59 years	32 (11.7%)	20 (17.9%)		52 (13.5%)
>60years	31 (11.3%)	11 (9.8%)		42 (10.9%)

Educational level	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Post Graduate and above	87 (31.8%)	31 (27.7%)		118 (30.6%)
Graduate	113 (41.2%)	27 (24.1%)		140 (36.3%)
Senior secondary	49 (17.9%)	37 (33.0%)		86 (22.3%)
Matric	15 (5.5%)	10 (8.9%)		25 (6.5%)
Middle school	6(2.2%)	5 (4.5%)		11 (2.8%)
Primary school/ No	4 (1.5%)	2 (1.8%)		6 (1.6%)

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Medical/ Paramedical professional?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Yes	77 (28.1%)	15 (13.4%)	0.002	92 (23.8%)
No	197 (71.9%)	97 (86.6%)		294 (26.2%)
education				

Marital Status	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Married	184 (47.7%)	75 (19.4%)	0.227	259 (67.1%)
Unmarried	79 (20.5%)	30 (7.7%)		109 (28.2%)
Divorcee/ Separated	2 (0.5%)	3 (0.8%)		5 (1.3%)
Window/ Widower	9 (2.3%)	4 (1.1%)		13 (3.4%)

Occupation	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Government services	99 (36.1%)	15 (13.4%)		114 (29.5%)
Private services	65 (23.7%)	14 (12.5%)		79 (20.5%)
Homemaker	1 (0.3%)	50 (44.6%)		51 (13.2%)
Own business	28 (10.2%)	5 (4.5%)		33 (8.5%)
Farmer	25 (9.1%)	0		25 (6.5%)
Student	28 (10.2%)	22 (19.6%)		50 (13.0%)
Unemployed	6 (2.2%)	4 (3.6%)		10 (2.6%)
Retired	22 (8.0%)	2 (0.5%)		24 (6.2%)

Table 3: Knowledge related questions

What is your primary source of information about COVID-19?

Facebook	18.3%
WhatsApp	44.0%
Newspaper	23.8%
TV News	77.97%
WHO Website	22.0%
Ministry of health & family welfare data	32.12%
Medical/ paramedical professional	24.61%

Heard about Aarogya Setu Mobile Application	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Yes	235 (85.8%)	80 (71.4%)	0.001	315 (81.6%)
No	39 (14.2%)	32 (28.6%)		71 (18.4%)

Very useful	24.61%
Somewhat useful	37.56%
Not useful	06.47%
Can't say/ Don't Know	31.60%

Which of these is/ are the common symptoms of COVID-19?

	Yes	No
1.- Fever	96.6	3.4
2.- Runny nose	56.4	43.6
3.- Dry cough	91.4	8.6
4.- Wet cough	11.9	88.1
5.- Weakness	32.6	67.4
6.- Breathlessness	70.2	29.8

There currently is no definite effective cure for COVID-2019, but early detection and treatment can help most patients recover from the infection.	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
True	258 (94.1%)	102 (91.0%)	0.329	360 (93.2%)
False	16 (5.9%)	10 (9.0%)		26 (6.8%)

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Which groups are at risk of severe illness if they are infected with the COVID-19?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
All age groups	49 (17.88%)	22 (19.64%)		71 (18.39%)
Elderly (> 60 years of age)	36 (13.13%)	12 (10.71%)		48 (12.43%)
People having underlying diseases	3 (1.09%)	4 (3.57%)		7 (6.25%)
Both B & C	184 (67.15%)	72 (64.28%)	0.386	256 (66.32%)
Don't know	2 (0.72%)	2 (1.78%)		4 (1.03%)

How severe are most cases of COVID-19?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Almost everyone survives	40 (14.59%)	21 (18.75%)		61 (15.80%)
Most survive, some die	227 (82.84%)	87 (77.67%)	0.493	314 (81.34%)
Some survive, most die	7 (2.55%)	3 (2.67%)		10 (2.59%)
Almost everyone dies	0 (0%)	1 (0.89%)		1 (0.259%)

Which of the following is correct about transmission of COVID-19	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
The disease is transmissible from person to person	264 (96.35%)	108 (96.42%)	0.897	372 (96.37%)
The disease is transmitted by animals to humans only	1 (0.036%)	0		1 (0.25%)
The disease is not transmissible	1 (0.036%)	1 (0.89%)		2 (.5%)
Don't know	8 (2.91%)	3 (2.67%)		11 (2.8%)

Persons with COVID-2019 cannot infect the virus to others when a fever is not present	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
True	74 (27%)	34 (30.35%)		108 (27.97%)
False	167 (60.94%)	54 (48.21%)	0.026	221 (57.25%)
Don't know	33 (12.04%)	24 (21.42%)		57 (14.76%)

What is the time period between exposure to COVID-19 infection and the appearance of the first symptoms (Incubation period)?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
1-28 days	26 (9.48%)	10 (8.9%)		36 (9.3%)
5-10 days	26 (9.48%)	13 (11.6%)		39 (10.1%)
1-14 days	195 (71.16%)	84 (0.75%)	0.145	279 (72.27%)
14-28 days	20 (7.29%)	1 (0.89%)		21 (5.4%)
Don't know	7 (2.55%)	4 (3.57%)		11 (2.84%)

People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
True	261 (95.25%)	110 (98.21%)	0.383	371 (96.11%)
False	5 (1.82%)	1 (0.89%)		6 (1.55%)
Don't know	8 (2.91%)	1 (0.89%)		9 (2.33%)

Ordinary residents should also wear specialized medical masks (N-95) to prevent the infection by the COVID-19 virus.	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
True	152 (55.47%)	67 (59.82%)	0.544	219 (56.35%)
False	99 (36.13%)	34 (30.35%)		133 (34.45%)
Don't know	23 (8.39%)	11 (9.8%)		34 (8.8%)

To prevent the infection by COVID-19, individuals should avoid going to crowded places such as markets, train stations and avoid taking public transportations.	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
True	268 (97.81%)	104 (92.8%)	0.06	372 (96.37%)
False	6 (2.18%)	8 (7.2%)		14 (3.62%)

How much of minimum distance should one maintain from others to prevent COVID-19 infection?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
3 meters	47 (17.15%)	26 (23.21%)		73 (18.91%)
1 meter	120 (43.79%)	39 (34.82%)	0.132	159 (41.19%)
1 feet	11 (4.01%)	9 (8%)		20 (5.18%)
6 feet	96 (35%)	38 (33.92%)		134 (34.71%)

COVID-19 mothers can breastfeed to child	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Yes	108 (39.41%)	45 (40.17%)		153 (39.63%)
No	94 (34.30%)	32 (28.57%)	0.467	126 (32.64%)
Maybe	72 (26.27%)	35 (31.25%)		107 (27.72%)

Table 4: Attitude of population towards COVID-19

	Completely Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Completely disagree
COVID-19 will be successfully controlled in India	115 (90.25) (29.79%)	170 (121.49) (44.04%)	65 (40.25) (16.83%)	23 (13.10) (5.95%)	13 (10.3) (3.36%)
Public lockdown is an effective measure to tackle COVID-19	210 (151.59) (54.4%)	133 (99.34) (34.45%)	28 (18.10) (7.25%)	15 (6.9) (3.88%)	-
The Government has the ability to stop the epidemic	143 (107.36) (37.04%)	168 (119.49) (43.52%)	47 (32.15) (12.17%)	20 (9.11) (5.18%)	8 (7.1) (2.07%)
The Health services have the ability to stop the epidemic	144 (108.36) (37.3%)	167 (123.44) (43.26%)	44(27.17) (11.39%)	24 (10.14) (6.21%)	7 (6.1) (1.81%)

	True	False	Maybe / Don't know	P Value
Washing hands frequently can lower the risk of COVID-19 infections	368 (267,101)	9 (4,5)	9 (3,6)	0.008
Social distancing is essential to stop the virus spread	379 (271,108)	2 (2,0)	5 (1,4)	0.123

During lockdown did you leave your house?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Often	69 (25.18%)	22 (19.64%)		91 (23.57%)
Sometimes	165 (60.21%)	70 (62.5%)	0.439	235 (60.88%)
Never	40 (14.59%)	20 (17.85%)		60 (15.54%)

Table 5: Practices of population towards COVID-19

Assessment of the Knowledge, Attitudes and Practices (KAP) of Indian Population towards ..

In recent days, have you worn a mask when leaving home?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Always	195 (71.16%)	72 (64.28%)	0.401	267 (69.17%)
Sometimes	74 (27%)	37 (33%)		111 (28.75%)
Never	5 (1.8%)	3 (2.67%)		8 (2.07%)

How much time do you spend washing your hands?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
10-15 sec	105 (38.32%)	55 (49.1%)		160 (41.45%)
20-40 sec	141 (51.45%)	47 (41.967%)	0.227	188 (48.70%)
40-60 sec	9 (3.28%)	2 (1.78%)		11 (2.84%)
Never Noticed	19 (6.93%)	8 (7.14%)		27 (6.99%)

To clean your hands, you prefer?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Washing hands with soap and water	223 (81.38%)	97 (86.60%)	0.444	320 (82.90%)
Using alcohol-based sanitizer	33 (12%)	9 (8%)		42 (10.88%)
Water	18 (6.56%)	6 (5.35%)		24 (6.21%)

Do you avoid touching your eyes, nose, and mouth with unwashed hands?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Always	168 (61.31%)	62 (55.35%)	0.310	230 (59.58%)
Sometimes	94 (34.30%)	47 (41.96%)		141 (36.52%)
Never	12 (4.3%)	3 (2.67%)		15 (3.88%)

Do you cover your mouth when you cough/ sneeze?	Male (n= 274) % of males	Female (n= 112) % of females	P value	All (n=386) %
Always	205 (74.81%)	80 (71.42%)	0.492	285 (73.83%)
Sometimes	66 (24%)	30 (26.78%)		96 (24.87%)
Never	3 (1%)	2 (1.78%)		5 (1.29%)