

Attitudes and Practices of Indians during the Covid-19 Pandemic

Aniruddh Agrawal^{1,*}, Anisha Agrawal¹, Tanisha Baid²

ABSTRACT

Background: The SARS-CoV-2 led to a nationwide lockdown in India from 24th March, 2020. It became important to identify people's attitudes and practices to allow rapid change in health policies to alleviate stress factors. **Objectives:** To evaluate the attitudes, practices and sources of information and their perceived reliability from people residing in India. **Methods:** An online-based survey which asked respondents about the change in their practices due to the pandemic and their opinions on the measures taken to prevent spread of the virus. was conducted on 29th March, 2020. 995 individuals (Average age – 42.8 years) responded from 24 states of India. Participants were invited to respond through the survey through dissemination of a link through online social media platforms. Only people who were residing in India were included in the study. **Results:** 58.6% were highly concerned about contracting the virus. 51.9% had stepped out during the lockdown period, most commonly to buy groceries (37.2%). 45% respondents faced mask shortages leading to prolonged use of the same mask (average 6.74 hours). 29.3% paid above the maximum retail price for their masks. Although people favored laws making self-isolation (95.2%) and mask wearing in public (81.5%) compulsory, support fell on introduction of a jail term for violating the law. Health care professionals were considered the most reliable source of information (4.42/5) followed by public health officials (4.03/5). However, 60.4% of the population used newspapers, magazines, etcetera for their information. **Conclusion:** People seem to rely on information sources that they themselves claim to be of inferior reliability. People generally support laws with fines to ensure prevention of virus transmission but do not support jail terms to these laws.

Key words: Coronavirus, India, Quarantine, Attitudes (Source: MeSH:NLM).

INTRODUCTION

SARS-CoV-2 was declared a global pandemic by the World Health Organisation (WHO) on 11th March, 2020,¹ following which many governments established lockdown of entire countries which prevented all people from stepping out of their homes, other than for delivering or receiving essential services.^{2,3} The Environmental spread of this virus was determined to be the primary method of transmission of this disease. In the month of March, the Government of India, issued a number of advisories to the general public which shaped their perception towards the disease.⁴⁻⁶

Similar studies on practices and attitudes of populations to a similar virus outbreak had been conducted in Taiwan, Singapore, Hong Kong, the United States⁷ and Australia⁸ during the previous SARS-CoV-1 pandemic and the H1N1 virus. Although at the time conducting the study, no literature evidence was available of a similar study being conducted in India, since then a few studies highlighting information on attitudes of people towards SARS-CoV-2 have been published. However, a majority of the studies that have been conducted in

India are based on knowledge of health care workers about the disease and not based on the practices of the general population.⁹⁻¹¹

An Indian study identifying attitudes and practices of a specific non-healthcare worker population of patients suffering from Type 1 diabetes mellitus during the pandemic¹² was conducted, the results of which could not be applied to a broad population.

Although to gain the most accurate information, a population-representative household survey could be performed, the time needed for planning and execution would be large.¹³ A telephonic survey requires high human resources and suffers from low response rates and biases.¹⁴ Therefore, an online survey tool was the ideal approach to reach large masses without needing large human resources.

During a rapidly evolving pandemic, like SARS-CoV-2, it becomes important to evaluate the attitudes of the affected population and rapidly make changes to public health policy that would ease tensions of the population by identifying stress factors and addressing them. Therefore, this study aims to evaluate the attitudes, practices and sources of

Aniruddh Agrawal^{1,*},
Anisha Agrawal¹, Tanisha
Baid²

¹Topiwala National Medical College,
Mumbai Central, Mumbai 400008,
Maharashtra, INDIA.

²Chauhan Institute of Science, Andheri
West, Mumbai, Maharashtra, INDIA.

Correspondence

Dr. Aniruddh Agrawal,
401 Sony House, CD Barfiwala Road,
Andheri West, Mumbai-400056,
Maharashtra, INDIA.
Mobile no: +91 9619004904
Email: ani@pubgeek.co

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knowledge that individuals rely upon during a pandemic. This would not only help in rapidly evolving public health policies for the SARS-CoV-2 pandemic but can be applied to future lockdown procedures.

MATERIALS AND METHODS

Study environment

India's first SARS-CoV-2 case was detected on January 30th, 2020 in the state of Kerala.¹⁵ 7 weeks later, a 14 hour, civil, self-imposed curfew was recommended by the Prime Minister of India on 22nd March, 2020.¹⁶ Following this, the government of India recommended complete lockdown of the nation for 21 days starting from 24th March, 2020 which meant that a total ban was being imposed on people from stepping out of their homes, except for those who wanted to retrieve essential services or were part of the essential services.¹⁷ This survey was electronically distributed on 29th March, 2020, five days into the nationwide lockdown.

Survey Questionnaire

Through the help of literature analysis and expert opinion, we were able to formulate a questionnaire with 59 questions, 54 of which were multiple choice questions. Information elicited by the questions included respondents' demographic details, their socioeconomic class using the Kuppaswamy Socioeconomic Scale updated for the year 2019,¹⁸ their obedience with the lock-down norms, their opinion of the lockdown norms, their concern about becoming ill with the SARS-CoV-2, their opinion on measures to protect the public, preferences for where they would be quarantined, opinion on measures to monitor compliance with quarantine, worries about quarantine, and preferred sources of information and their perceived efficacy during the pandemic. This survey was designed and elicited using a web-based survey portal at <https://www.surveyparrot.com/> and was available only in the English language.

Survey Respondents

The survey was disseminated with the help of social networking websites and applications (Twitter, Facebook and Whatsapp) to large groups of audiences. No paid promotion was done for people to answer this survey. The link to the survey was shared through the authors' social medial handles on various platforms. Due to this, the total response rates are not available for the survey. All people who completed the survey were included in the study, any person who was not a resident of India was excluded from the study. A total of 999 people completed the survey, out of which 4 resided outside India and were excluded. Therefore, data was collected from the 995 respondents (Average age – 42.8 years) that met all inclusion and exclusion criteria. No respondent was provided with any remuneration for answering the survey, financial or otherwise.

Statistical Analyses

All analyses were conducted using the SPSS v24 software.¹⁹ We presented continuous variables as means with 95% class interval and/or range of responses. For categorical variables, descriptive statistics were calculated as percentages. Correlation analysis was performed with the help of Pearson Correlation for continuous variables and Mann-Whitney-U test for correlation between ordinal and nominal variables.

Ethics Statement

This study was approved by an Institutional Review Board. At the start of the questionnaire, all participants read and accepted an informed consent statement. All responses to the questionnaire were anonymized and entered into an online questionnaire database.

Limitations

Although this study tries to report about attitudes of Indians towards the SARS-CoV-2 pandemic, it has limitations in that the respondents of this study do not proportionally represent the population of India. The socio-economic status of the respondents was different than that reported by the Indian census in 2011,²⁰ however, there may have been changes in the socio-economic strata in the last 9 years which may help in the extrapolation of our findings to the broader population. Another limitation was that most of the respondent population was from one state, however, there were participants from 24 different states which gave a broader general view of the Indian population. Although a population representative household survey would have been ideal, it would have taken months of preparation and data collection which would have made the findings obsolete due to the rapidly emerging changes in the pandemic.¹³

RESULTS

i) Demographic and Socioeconomic Information

Out of 995 respondents, 490 (49.2%) were male and 504 (51.8%) were females. One respondent identified themselves as 'other'. The average age of respondents was 34.15 years (SD: 15.02 years). Although the respondents resided in 24 different states and/or union territories, a majority of the responses were from the state of Maharashtra (76.1%). The number of respondents from each state has been illustrated in Table 1. Table 2 gives information about the socio-economic and household status of the respondents. As reported by the Kuppaswamy Socioeconomic Status Scale, most respondents were from the upper class (64.8%) and the upper middle class (28.9%).

ii) Household Information

The average number of people in each of the respondents' household were 4.41 (SD: 2.77) and 53.8% of respondents had at least one senior citizen (defined as adult above 65 years of age) living in their household. On the scale of 0-5 of how concerned the respondents were of themselves or someone in their household contracting SARS-CoV-2 virus, 13.1% chose 0 indicating that they were not at all concerned, 28.3% chose between 1-3 indicating slight to moderate concern and 58.6% chose 4-5 indicating high concern. (Figure 1)

The concern for contracting SARS-COV-2 themselves or family members was neither statistically correlated to the number of people in their household ($r=0.016$, $p=0.60$) nor the number of senior citizens in their household ($r= -0.22$, $p=0.53$).

iii) Acquaintance with a person suffering from SARS-CoV-2

3% ($n=30$) respondents said that they personally knew someone who had contracted the SARS-CoV-2 disease. However, the respondents' concern for contracting SARS-CoV-2 themselves or family members was not statistically correlated to them knowing a person suffering from SARS-CoV-2. (Mann Whitney U test, $p = 0.19$).

iv) Activity during and before lockdown

904 (90.9%) respondents reported that they had put themselves in voluntary self-isolation even before lockdown measures were implemented by the government. On average, respondents had isolated themselves for 10.55 days (SD - 3.98), preceding them answering the questionnaire. Only 51.9% ($n=516$) of respondents had stepped out of their apartments for an average of 3.18 times (SD - 3.94) in the preceding 7 days. Only 14.7% ($n=146$) had gone to their office/school in the preceding 7 days. The most common reason for stepping out was

shopping for groceries 37.2% (n=370) followed by visit to pharmacy 16.6% (n=165). Table 3 highlights the respondents' different reasons for stepping out in the 7 days preceding them answering the questionnaire. An additional 27.2% (n=271) had stepped out of their homes in the preceding 15 days for an average of 10.65 (SD- 12.5) times.

v) Information on mask wearing compliance and availability

84.92% (n=845) of respondents purchased a mask during the pandemic. Most common mask bought by the respondents was a surgical mask (42.1%). 11.38% (n=92) of the respondents who had bought masks also reportedly wore it inside their homes to avoid contracting the coronavirus, although none of these respondents had any SARS-CoV-2 positive patients in their households. On average the respondents wore the same mask for 6.74 hours (SD- 9.64 hours). 45% (n=448) people said that they faced shortage of masks and 29.3% (n=292) said that they paid above the maximum retail price (MRP) for their masks.

vi) Hand Hygiene Knowledge and Compliance

86.83% (n=864) of respondents thought that hand washing with non-medicated soap was equal to or even better than using an alcohol-based sanitizer. 55.9% (n=556) respondents faced shortage of hand sanitizers. However, 19.6% (n=195) respondents did not check whether their sanitizer was alcohol based or not before purchasing it.

Table 1: Opinions about Laws that could be implemented during the pandemic.

A law with respect to Self-Isolation	Favor	Oppose
Having a law making self-isolation compulsory	95.2% (n=947)	4.8% (n=48)
Having a monetary fine if caught breaking the law	89.12% (n=844 out of 947)	10.87% (n=103 out of 947)

How much should the fine be? (in INR)	
Amount	Support by % of respondents (out of 844)
200	13.99%
500	25.57%
1,000	28.79%
5,000	20.74%
10,000	10.91%

How much should the jail term be?		
Length of term	Support by % of respondents (out of 462)	
1 day	20.57%	
4 days	12.99%	
7 days	25.54%	
2 weeks	16.23%	
1 month	13.85%	
≥ 2months	10.82%	

This table highlights the opinion of the individuals on a potential law of self-isolation and whether they still supported it if a fine was introduced for violating the law and if a jail term was introduced for violating the law.

vii) Attitude towards laws and practices during the isolation period

a) Laws related to isolation (Table 1)

95.2% (n = 947) of the respondents said that they would support a law that made self-isolation compulsory other than for retrieving and delivering essential services. 89.12%, (n=844 out of 947) respondents showed support for introducing a fine for violating this isolation law. However, support fell to 48.78% (n=462 out of 947) for introducing a jail term for violating the law. Most respondents (54.38%, n=459 out of 844 that supported a fine) recommended a fine between INR 500-1000. Most respondents (59.52%, n=275 out of 462 that supported a jail term) recommended a term between 1-7 days. There was no statistically significant correlation between support for having a fine for violating the law or the amount of fine for violating the law and the socio-economic status of the respondent. (p=0.17, between upper class and lower middle class).

b) Laws related to mask compliance (Table 2)

81.5% (n=811) of the respondents said that they would support a law that made mask wearing compulsory for up to 4 months after the end of the lockdown period. 83.97% (n=674 out of 811) of the respondents showed support for introducing a fine for breaking the law. However, support fell to 31.44% (n=255 out of 811) for introducing a jail term for violating

Table 2: Opinion about Mask compliance and laws.

A law with respect to Mask compliance	Favor	Oppose
Having a law making wearing of masks in public places compulsory for 4 months after the end of the lockdown	81.5% (n=811)	18.5% (n=184)
Having a monetary fine if caught breaking the law	83.97% (n=681 out of 811)	16.07% (n=130 out of 811)

How much should the fine be? (in INR)	
Amount	Support by % of respondents (out of 681)
200	27.78%
500	31.89%
1,000	24.11%
5,000	10.46%
10,000	5.76%

How much should the jail term be?		
Length of term	Support by % of respondents (out of 255)	
1 day	30.20%	
4 days	14.90%	
7 days	25.49%	
2 weeks	9.80%	
1 month	10.20%	
≥ 2months	9.41%	

This table highlights the opinion of the individuals on a potential law of making masks compulsory in public spaces and whether they still supported it if a fine was introduced for violating the law and if a jail term was introduced for violating the law.

the law. Most respondents (84.57%, n=570 out of 674 that supported a fine) recommended a fine between INR 200-1000. Most respondents (74.50%, n=190 out of 255 that supported a jail term) recommended a term between 1-7 days. There was no statistically significant correlation between support for having a fine for violating the law or the amount of fine for violating the law and the socio-economic status of the respondent. ($p=0.46$, between upper class and lower middle class)

c) Concerns during the self-isolation period

The most common cause for concern was getting medical care from doctors (49.9%, n=497), followed by getting groceries (32%, n=318).

d) Monitoring of self-isolation or home quarantine by public health officials (Table 3)

When given the options of which method they would approve of public health officials using to make sure people abided by home-quarantine or self-isolation, the most respondents supported periodic telephone calls (89%) and least support was received by an electronic tracking bracelet (71.8%).

Table 3: Monitoring of self-isolation or home quarantine by public health officials.

Method used by public health officials for monitoring self-isolation or home quarantine	Percentage of Respondents that approve
Periodic Telephone Calls	89% (n=886)
Guards Stationed on Every Street	82.5% (n=821)
Periodic Video Screening	78.4% (n=780)
Daily Visit by Public Health Officials	75.3% (n=749)
Electronic Location Tracking Bracelet	71.8% (n=714)

This table shows the approval rate for different methods that the government could use for monitoring compliance with stay-at-home orders.

Table 4: Attitudes of people about quarantine measures.

Attitude about	Options	Percentage of respondents
Location of quarantine for or immediate family members who are infected	Home	28.7% (n=286)
	Separate medical facility	71.3% (n=709)
Location of quarantine for themselves, if infected	Home	24.5% (n=244)
	Separate medical facility	75.5% (n=751)
Concerns if respondents were taken to a government medical facility for quarantine if they were suspected of contracting the virus	Being exposed to someone who actually is infected with SARS-CoV-2	76.5% (n=761)
	Inadequate hygiene at place of quarantine	58.7% (n=584)
	Overcrowding at place of quarantine	56.8% (n=565)
	Inadequate medical care at facility	46.6% (n=464)
	Being unable to communicate with family members	39.2% (n=390)

This table highlights what location individuals would want their loved ones/ themselves to be quarantined in if infected and also the different concerns that they had, if they were forced to be quarantined at a government medical facility.

When respondents were asked if they would voluntarily report to authorities if they observe someone breaking self-isolation norms, 87.8% said that they would but out of these, only 40.3% knew where they would report such a person.

viii) Attitude towards quarantine (Table 4)

76% (n=756) of respondents said that they would support passing a law that would force persons who is suspected to be exposed to the virus to be quarantined in a facility that is decided by the government and not the exposed persons themselves. However, on enquiring where they would rather have a family member quarantined if he/she contracted the virus, 71.3% (n=709) respondents said they would prefer to have them quarantined at a separate medical facility rather than home. A higher percentage of people, 75.5% (n=751), said that if they themselves contracted the virus, they would prefer to be taken to a medical facility for quarantine. Some of the most important concerns that people had, should they be taken to a government facility for quarantine if they were suspected to be infected by SARS-CoV-2, were, being exposed to someone who actually is infected by the virus (76.5%) and inadequate hygiene at the place of quarantine (58.7%).

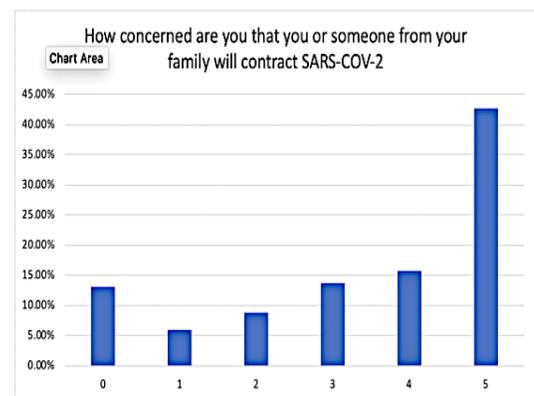


Figure 1: This is Figure Number 1 which represents the likert scale (1-5) for which people graded how scared they were that someone from their family or they themselves would contract the coronavirus.

Table 5: The source of information that people relied on and that they found to be the most reliable.

Source of Information	Percentage of respondents that use it	Reliability score (Mean score out of 5)
Magazine/ TV/ Radio/ Newspapers	60.4% (n=601)	3.13 (SD - 1.090)
Government / Public Health Authorities	38.3% (n=381)	4.03 (SD - 0.98)
Messages / Documents / Videos on WhatsApp	35.6% (n=354)	1.52 (SD - 0.88)
Doctor / other health care professional	31.9% (n=317)	4.42 (SD - 0.79)
Family and Friends	23.7% (n=236)	2.18 (SD - 1.03)
Official WHO channel on website or WhatsApp	29.9% (n=298)	-

This table highlights the sources of information that people used as well as how reliable they thought that a particular source of information was.

ix) Sources of information and perceived reliability (Table 5)

The most common sources of information used by respondents were Newspapers, magazines, radio and TV (60.4%) followed by Government and Public Health Authorities (38.3%). Respondents perceived doctors and other healthcare professionals to be the most reliable source of information (mean reliability score of 4.42 out of 5) followed by Government and public health authorities (mean reliability score 4.03 out of 5). Information distributed on the instant messaging platform WhatsApp was perceived to be least reliable. (Mean reliability score 1.52 out of 5).

DISCUSSION

The SARS-CoV-2 pandemic has led to a complete lockdown of 1.2 billion people in India for a period of 21 days, with possible extensions in sight.¹⁷ This presents researchers with a unique opportunity to understand the attitudes and practices of people towards a pandemic. It is also important to understand and account for the international variability in attitudes, beliefs and practices.²¹

4.4 people resided per household in our study population, which is almost twice that of the United States,²² which could explain the high level of concern that they had for their family members contracting the virus. (Figure 1) Although the elderly are more susceptible to the disease²³ there was, however, no correlation between having a senior citizen in the household and concern for a family member contracting the virus.

Not unlike the people in the United States and the United Kingdom which supported the lockdown measures, as reported by Geldsetzer²⁴ most of the respondents had decided to pre-emptively self-isolate to prevent contracting and/or spreading the infection.

The goal of the lockdown procedure taken by the government was to ensure that people would not step outside their homes, however, 51.9% of people had left their homes during the quarantine period. Therefore, in order to limit the movement of people, the most common reasons for them to step out need to be identified and then dealt with in accordance with local guidelines. The most common factors that would greatly reduce such movement include supply of groceries direct-to-doorstep and supply of necessary medication. As almost 50% of people showed concerns about getting their groceries during this self-isolation period, this assurance of door-step-delivery would help reduce tensions.

Although masks were purchased by about 80% of the respondents, around 22% were wearing masks made from cloth, which have shown to be ineffective in preventing viral illnesses in the wearer.²⁵ This therefore can cause a false sense of security and increase infection rates among wearers.²⁶ On the other hand, shortages of masks and hand sanitizers affected almost 50% of the people leading to them using masks for almost 7 hours, whereas Barbosa *et al.* have reported that the bacterial filtration efficacy of most masks decreases after 4 hours of continuous wear.²⁷ A possible method to promote rational use of masks would be to ask people to avoid wearing masks at home if there is no threat from a SARS-COV-2 positive patient at home, something that almost 12% of the respondents had done. Another worrisome aspect was the pricing above that of the maximum retail price, although the government had, on 21st March capped the prices of double and triple ply masks.²⁸ However, because 26.5% of the respondents didn't know the MRP of the masks, it becomes important to spread this public awareness. Another aspect needing public awareness is the fact that only alcohol based sanitizers are effective against coronaviruses and not chlorhexidine²⁹ as almost 20% of the respondents hadn't checked whether their hand sanitizer contained alcohol or not before purchasing it.

A whopping 86.83% of individuals thought that hand washing with medicated soap was equal to or better than using an alcohol-based sanitizer, while in reality usage of soap has no microbicidal effect on enveloped viruses.³⁰

When asked to give opinions on different laws and practices that could be instituted, respondents were generally in favor of laws forcing people to isolate and wear masks in public and were even tolerant to fines on violations. However, like the regions of Taiwan, Singapore, United States and Hong Kong⁷ support fell for these laws if jail terms were introduced for violations. Although one would expect that people of a higher socio-economic class would be more tolerant to having higher fines for law violations, it was interesting to see that there was no statistically significant change between the socio-economic classes.

The Indian respondents were more supportive of electronic location tracking bracelets and guards stationed on every street than the US, Hong Kong, Taiwan or Singapore,⁷ however, support for daily visit by a public health professional was lowest in Indians among the five countries. This could possibly stem from some sort of distrust with public health authorities in India as if it was a matter of obtrusion of privacy, a much lesser percentage of people would have supported an electronic location tracking bracelet.

Although people in the United States, Singapore and Taiwan, preferred home quarantine,⁷ there was strong support in India towards quarantine at a separate medical facility, for both relatives as well as the respondents themselves. This result closely resonates with the opinion of people from Hong Kong.⁷

Concerns about improper infection control, inadequate hygiene and overcrowding at government medical facilities were commonplace and should be addressed to allay people's fears which would prevent them from hiding potential diagnoses and symptoms and decrease community spread of the virus.

Not unlike the United States, Taiwan, Singapore, Hong Kong,⁷ doctors were considered the most reliable source of information in India. Although there was a genuine sense of mistrust amongst public health departments in the United States and Taiwan,⁷ however, not unlike Australia⁸ the public health authorities in India drew high reliability scores from the respondents. A concerning statistic was that, although considered to be the most reliable, these sources were being used by a smaller fraction of the population than those that were relying on magazines, TV, radio, newspapers and instant messaging services like WhatsApp for their information.

A study conducted by Dkhar *et al.*³¹ limited to the state of Jammu and Kashmir in India also reported that 36% people faced issues with obtaining essential commodities and services in that state, compared to almost 50% in our studies that faced a problem with getting medical attention from doctors. Around 85% people agreed with practice of self-isolation or home quarantine in this study, similar to the 95% agreement in our study. However, a large deviation from this study by Dkhar *et al.*³¹ which said that only 35% of respondents supported wearing masks in public, our study reported support for this measure at 85%. Most other surveys conducted in India were related to opinions and perceptions of healthcare works and therefore a direct comparison between these studies and our reports would be an unfair assessment.^{9-11,32}

CONCLUSION

People are taking an active response to the lockdown measures imposed by the government, however, certain pain-points like getting groceries and medications are preventing efficient implementation of these procedures. People's use of unreliable sources of information may lead to spread of misinformation and panic. To evaluate misinformation, future

studies should focus on knowledge of people towards the pandemic and correlate it with sources of information that they use. Further studies should be performed using representative population data to get a complete picture of the attitudes and practices of the Indian citizenry.

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CONFLICT OF INTEREST

The authors declare no Conflict of interest.

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