

Research Paper: Comprehension, Perception, and Practice of Indians about COVID-19 Anticipating the Second Wave of the Pandemic



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ABSTRACT

Background: We assessed knowledge, attitudes, practice, and perceptions about COVID-19 among a convenience sample of the general public in India anticipating the second wave of the pandemic.

Methods: This questionnaire-based survey was conducted among the general population quarantined at various institutional quarantine facilities in the city of Nagpur, Maharashtra, India. Informed consent was obtained from each participant. The self-designed questionnaire comprised 25 questions regarding knowledge, eight for attitude, and ten for practice. Knowledge questions were responded to on a Yes/No basis with an additional 'don't know' option. The true answer was given 1 point and false/I don't know answers were given 0 point.

Results: The majority of the participants were aware of COVID-19 (97.9%) and did not either wash or knew how to properly dispose of the used mask (88.02%). Only 10.96% of the participants agreed that they verify the social media posts shared over WhatsApp and Facebook on government authentic websites before sharing them with family and friends.

Conclusion: Awareness about the virus, modes of spread, good practice, and an optimistic attitude is the prime requisite to curb the spread and to avoid the impending severity anticipating the second wave of the pandemic.

1. Introduction

T

he World Health Organization (WHO) acknowledged Coronavirus Disease 2019 (COVID-19) as a pandemic, the diseases have now expanded to more

than two hundred countries, and India is one of the leading nations in the global tally for COVID-19 positive cases. India imposed lockdown strictly and started removing the lockdown in a phase-wise manner. The number of positive cases is still on the rise in India. The winter and festive seasons have further vexed the policy-

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makers about the rise in the number of COVID-19 cases. The news of the second wave of the pandemic already hitting European countries has startled the policymakers in India. If such a second wave happens in India, it will be very grave and treacherous.

To circumvent it and to slacken its severity, it is of paramount importance that the common public along with the government takes tremendous cautiousness of self-care and surrounding care, which can only happen with the right knowledge and a positive attitude, and good practices. The beliefs and perception should be fashioned on the foundation of facts, and not on fake news (infodemic). Most of the studies on the Knowledge, Attitudes, Practice (KAP) done in the Indian population were done on online users and the tech-savvy younger generation. Missing out a major chunk of non-internet users, we could not find any study, in which participants were from various institutional quarantine facilities. These people are at high risks and perhaps more appropriate in projecting their practices. No published literature has evaluated the KAP of the Indian population anticipating the second wave. Hence, we aimed at conducting a KAP study about COVID-19 in Indians anticipating the second wave of the pandemic.

The World Health Organization (WHO) declared COVID-19 as a global pandemic on 11th March 2020 [1]. India currently has the largest number of confirmed cases in Asia. The countries that have already reported the peak of transmission are easing their preventive measures yet fearing the second wave of infection. The wide range of measures and preparedness, which included social distancing, social isolation, quarantine, washing hands, lockdowns, and travel bans have halted and interrupted the spread of the virus. However, the virus is still here; its transmission has been slowed but not eliminated [2].

WHO termed the flow of (mis) information as “infodemics”; within this context, if COVID-19 causes a second wave, the adverse rumors and speculations may significantly affect plans for preparedness [3]. News of the second wave of pandemic hitting Europe and the United States made rounds in late September and October adding to the trepidation [4, 5]. Awareness about the virus, modes of spread, good practice, and an optimistic attitude are the prime requisites to curb the spread and to avoid the impending severity anticipating the second wave of the pandemic.

In several European nations, after the initial decline and subsequent relaxation of the lockdowns, the number of COVID-19 cases has again started to escalate. It is

predicted that the disease is here to stay and probably may even become endemic. However, the conundrum still remains – when will the pandemic subside? To this, it has been argued that the end line may be different for different countries and will be affected by many factors, the important one being the availability of an effective and safe vaccine against COVID-19 accessible to all on a global level [6].

On Medline/PubMed/scholar search, Indian KAP about COVID-19 were mostly done on health care professionals, and in most the participants were online users only [7-10]. The knowledge and attitudes of the common masses are expected to largely influence the degree of adherence to the personal protective measures and ultimately the clinical outcome. Considering the relevance of all the above factors, this study was done to assess knowledge, attitudes, practice, and perceptions about COVID-19 among a convenience sample of the general public in India anticipating the second wave of the pandemic.

2. Methods

Participants and data collection

This cross-sectional study, a questionnaire-based survey was conducted among the general population quarantined at various institutional quarantine facilities in the city of central India from August 30 to October 30, 2020. Informed consent was obtained from each participant. A team of health care workers, including two doctors and two nursing staff, performed the data collection process by wearing a mask, face shield, and gloves at a well-ventilated room keeping a minimum distance of 4 m from the participants.

Questionnaire

The questions were established based on published literature and the official sites of WHO/MOHFW/ICMR and authors' experience of KAP, and the questionnaire was sent to five experts to consult their opinions followed by a small pilot study (with 20 participants) to test its simplicity and difficulty (Cronbach's alpha coefficient: 0.78). Demographic variables included age, gender, education, and residence. The self-designed questionnaire comprised 25 questions regarding knowledge, eight for attitude, and ten for practice. Knowledge questions were responded to on a Yes/No basis with an additional 'don't know' option. The true answer was given one point and false/I don't know answers were given 0 point. Higher scores represented better knowledge. Bloom's cut-off points scoring was used to denote good, moderate and poor scoring. With

score between 100% to 80% as good, 79.99% to 60% as moderate and less than 60% as poor knowledge scores.

Statistical analysis

Statistical analyses were performed using SPSS v. 22. KAP scores were tested for normality of distribution. Data were expressed as Mean±SD and categorical data were expressed as frequency and percentage. Comparison of KAP scores among the participants with respect to various demographic variables was done using an independent samples t-test and One-Way Analysis of Variance (ANOVA). In this study, P-value <0.05 was statistically significant.

3. Results

Demographic characteristics

Table 1 depicts the demographic characteristics of the study population. Out of the 684 participants, 51.02% were males. Only less than 10% of the participants were from rural areas.

Knowledge

The results of the knowledge survey are presented in Table 2 (Questions 1 to 25). The majority of the participants were aware of COVID-19 (97.9%). More than 80% of the study population knew that neither vitamin and mineral supplement nor malaria drug Hydroxychloroquine cures the disease. The overall score of the participants was 18.7 out of 22, which shows a good knowledge of the study population about COVID-19.

Attitude

Table 2 (Questions 26 to 33) shows that there has been a change in the attitude towards healthy eating and general and personal hygiene after COVID-10 (88% and 94% respectively). The majority of the subjects were worried about the risk of cross-transmission to others, while 12% had difficulty in sleeping due to the worries about the ongoing pandemic. Also, 85.9% of the participants showed trust in the measures taken by the government and 87.8% believed that lessons learned from this pandemic will prepare us better to prevent a similar global pandemic.

Practice

Table 2 (questions 34 to 43) represents the responses to the practice questions. About 26.9% of the participants were using the Arogya setu app by the government of India. The majority of the participants did not either wash or knew how to properly dispose of the used mask

(88.02 %). Only 10.96% of the participants agreed that they verified the social media posts shared over WhatsApp and Facebook on government authentic websites before sharing them with family and friends.

Perception

Participants were asked how they feel about the pandemic now versus the time when they first heard of it. They were asked to choose freely (one or more) from the options, like angry, nervous, scared, stressed, relaxed, optimistic, or happy (Figure 1). Participants were asked about the reason for the continuous rise of cases in India regardless of the efforts taken by the government (Figure 2).

Analysis of KAP scores with respect to demographic characteristics

Table 3 describes the scores of KAP towards COVID-19 concerning demographic variables, such as gender, age, residence, and education. The knowledge scores of the female subjects were slightly higher than those of males; however, the difference was not significant ($P>0.05$). Higher scores of females were observed in the attitude and practice compared with that of males. In addition, the difference in attitude score was significant between different genders ($P<0.05$). The elderly age group (more than 60 years) showed lower scores in the scores of KAP compared with the other groups. Participants residing in the urban areas showed higher scores in KAP, and the difference was significant regarding attitude ($P<0.05$).

4. Discussion

Better knowledge and awareness about a situation influences attitude and practices. In this study, we found that as high as 97.9% of the participants were aware of the ongoing pandemic of COVID-19. The major sources of information were television news channels and radio, followed by social media and newspapers. This is similar to the findings in a study conducted by Narayana et al. [11].

The participants had good knowledge about the fake news and myths about the COVID-19 pandemic. Around 88.89% of participants knew about WHO, MoHFW, ICMR, State government health portals, and Arogya setu app as authentic sources for information. But, only 10.96% of the population agreed that they have verified posts shared on WhatsApp and social media. Several sites, like WHO, MoHFW, ICMR, and State government health portals, and Arogya setu app are providing myth busters and authentic information. Governments are also urging people to not sharing these messages without checking their authenticity.

Table 1. Demographic details of the participants

Variables		No. (%)
Gender	Male	349 (51.02)
	Female	335 (48.98)
Age – category (Years)	18-30	199 (29.09)
	30-60	388 (56.73)
	60<	97 (14.18)
Residence	Urban	621 (90.79)
	Rural	63 (9.21)
Education	Illiterate	67 (9.79)
	Reading and writing ability	72 (10.53)
	Elementary	386 (56.43)
	Secondary and above	159 (23.25)



The stigma related to the disease is evident by the observation that 61.99% of participants feared the risk of getting the infection from a healthcare worker living in their proximity. Also, 75% of the participants had fear of expulsion from society, if they declare to have symptoms. As COVID-19 is a new disease, its emergence and spread can cause confusion, anxiety, and fear. Fear is the breeding ground for hatred and stigma. Social stigma has arisen as certain populations are targeted as being the reason for this outbreak. It is vital to avoid this stigma as it can make people hide their illness and not seek health care immediately [12].

The current study found that 88.89% of participants felt that they have become more conscious about their healthy eating habits. A higher percentage (94.88%) of people had positive changes in their attitude as far as personal and surrounding hygiene is concerned. Several studies have similar findings of change in eating habits and lifestyle modifications during the COVID-19 pandemic [13, 14]. In this study, 12% of the participants had sleeping difficulties due to worry about COVID-19, which can be attributed to economic crisis-related stress, social and travel restrictions, changes in daily life, and mental illness [15].

This study displayed good practices in the participants, as 97.95% of the population were using face masks when going outdoors, but the majority of the participants (88.02 %) did not know about proper disposal or about regular washing of cloth masks after use. India is the largest medical waste generator in Asia [16]. The recommendations by the government for proper disposal are seldom followed and hence, this could be another factor

in the spread of the infection. It is of prime importance to make people aware of the risks of infection spread and the importance of proper disposal of masks [17].

The world's battle against the novel coronavirus pandemic has seen heavy reliance on technology. Arogya Setu, COVID 19 Feedback, MyGov, SAHYOG, COVID-19 Quarantine Monitor- Tamil Nadu, COVA Punjab, and Test yourself Goa are some of the apps that are developed by the state and central government, of which Arogya setu app is most commonly used [18]. The app is loaded with authentic information and easy-to-use features, but in this study, we found only 26.90% of the participants used the app, and a need was felt to further encourage the use of this informative app to the public.

The perception of participants regarding COVID-19 has changed from the initial months. Participants were more scared and stressed in the initial months and gradually, positive feelings augmented. This change in perception can be attributed to the increase in knowledge about the virus and the disease, the mode of spread, and the belief and rise in the trust in the measures taken by the government at various fronts.

Regarding the reasons for India's continuous rise in cases, the participants pointed out various reasons, including the fear of hospitalization and the stigma related to the isolation that stops people from approaching timely health care leading to the more spread of the disease. Another common reason, which participants perceived was the casual attitude of the public in general, which is mainly because the majority of the infected individuals are only mild cases and have minimal symptoms, resulting in a casual approach and non-adherence to the

Table 2. Results of the knowledge, Attitude, and Practice survey (n=684)

SN	Questions	No. (%)		
		Yes	No	I Don't Know
Knowledge Questionnaires- Survey Results [1-25] Maximum Score 22				
1	Are you aware of COVID-19?	668 (97.66)	16 (2.34)	0 (0)
2	What is your source of information? (multiple options)	TV news channel & Radio	426 (62.28)	
		Social media (Facebook/WhatsApp/Twitter)	281 (41.08)	
		Newspapers	136 (19.88)	
		Government websites	27 (3.95)	
		Family and friends	78 (11.40)	
		Healthcare workers	47 (6.87)	
3	Is COVID-19 caused by bacteria?	27 (3.95)	642 (93.86)	15 (2.19)
4	Is Old age at higher risk of severity?	629 (91.96)	34 (4.97)	21 (3.07)
5	Do comorbidities, like raised Blood Pressure or Diabetes have a higher risk of severity?	615 (89.91)	47 (6.87)	22 (3.22)
6	Are you Aware of common COVID-19 symptoms?	608 (88.89)	13 (1.90)	63 (9.21)
7	What are the common symptoms you know?	Fever	602 (88.01)	
		Cough	553 (80.85)	
		Weakness	216 (31.58)	
		Sore throat	232 (33.91)	
		Loose motions	62 (9.06)	
		Loss of smell	159 (23.25)	
		Loss of taste	28 (4.09)	
8	Are you aware of travel-associated transmission risks?	581 (84.94)	68 (9.94)	35 (5.12)
9	Is COVID-19 treatable?	13 (1.90)	615 (89.91)	56 (8.19)
10	Do Vitamins and mineral supplements cure COVID-19?	75 (10.96)	581 (84.94)	28 (4.10)
11	Does malaria drug HCQ/Hydroxychloroquine cure COVID-19?	150 (21.93)	478 (69.91)	56 (8.16)
12	Is vaccine for COVID available?	6 (0.88)	615 (89.91)	63 (9.21)
13	Do you know when to contact a Doctor?	615 (89.91)	47 (6.87)	22 (3.22)
14	Do you know the COVID-19 testing area near you?	574 (83.91)	75 (10.96)	35 (5.13)
15	Are you aware of common surfaces that can be a source of infection spread?	526 (76.90)	68 (9.94)	60 (13.16)
16	Are you aware that Most people who get COVID-19 recover from it?	588 (85.96)	69 (10.09)	27 (3.95)
17	Does Drinking alcohol protect against COVID-19?	54 (7.89)	615 (89.91)	15 (2.20)
18	Does Thermal scanners detect COVID-19?	13 (1.90)	601 (87.87)	70 (10.23)
19	Does 5 G network spread COVID-19?	47 (6.87)	205 (29.97)	432 (63.16)
20	Are antibiotics effective in protecting or treating COVID-19?	164 (23.98)	478 (69.88)	42 (6.14)
21	Do you know any authentic source for information about COVID-19	608 (88.89)	13 (1.90)	63 (9.21)

SN	Questions	No. (%)		
		Yes	No	I Don't Know
22	What are the authentic sources for information?	WHO	287 (41.96)	
		MOHFW	41 (5.99)	
		ICMR	6 (0.88)	
		State government health portal	225 (32.89)	
		Arogya Setu app	184 (26.90)	
23	Can a person with COVID-19 transmit the virus to others when fever is not present?	615 (89.91)	20 (2.92)	49 (7.17)
24	Can COVID-19 spread via respiratory droplets of infected individuals?	629 (91.96)	27 (3.95)	28 (4.09)
25	Covid-19 symptoms appear within 2-14 days	492 (71.93)	68 (9.94)	124 (18.13)

Attitude Questionnaires- Survey Results [26-33] Maximum Score 8

26	Have you become more conscious about healthy eating habits?	608 (88.89)	54 (7.89)	22 (3.22)
27	Have you become more conscious about self and surroundings hygiene?	649 (94.88)	27 (3.95)	8 (1.17)
28	Are you having difficult sleep due to worry about COVID-19?	82 (11.99)	567 (82.89)	35 (5.12)
29	Are you worried about the cross-infection to other family members?	588 (85.96)	82 (11.99)	14 (2.05)
30	Are you scared of getting the disease from a healthcare worker who lives near You?	424 (61.99)	205 (29.97)	55 (8.04)
31	Are you afraid of expulsion from society if you get infected?	513 (75.00)	143 (20.91)	28 (4.09)
32	Do you think the government is doing enough to stop the pandemic?	588 (85.96)	61 (8.92)	35 (5.12)
33	Do you think the lessons learned from this pandemic will prepare us better to prevent a similar global pandemic?	601 (87.87)	13 (1.90)	70 (10.23)

Practice Questionnaires- Survey Results [34-43] Maximum Score 10. Only Two Options Yes/No

	Questions	Yes	No	-
34	Are you washing your hands regularly with soap and water?	663 (96.92)	21 (3.08)	-
35	Are you using disinfectant/sanitizer at home?	492 (71.92)	192 (28.08)	-
36	Do you cover your nose/mouth while coughing/sneezing?	656 (95.90)	28 (4.10)	-
37	Are you maintaining social distancing?	629 (91.95)	55 (8.05)	-
38	Are you avoiding social gatherings and meetings?	649 (94.88)	35 (5.12)	-
39	Are you using face masks when going outdoors?	670 (97.95)	14 (2.05)	-
40	Do you wash/dispose of the masks after every use?	82 (11.98)	602 (88.02)	-
41	Are you wearing the mask during exercises?	259 (37.86)	425 (62.14)	-
42	Are you using Arogya setu app?	184 (26.90)	500 (73.10)	-
43	Do you verify WhatsApp/Social media posts about COVID-19 on authentic websites (like WHO/ICMR/MOHFW/State Govt. Portals)	75 (10.96)	609 (89.04)	-

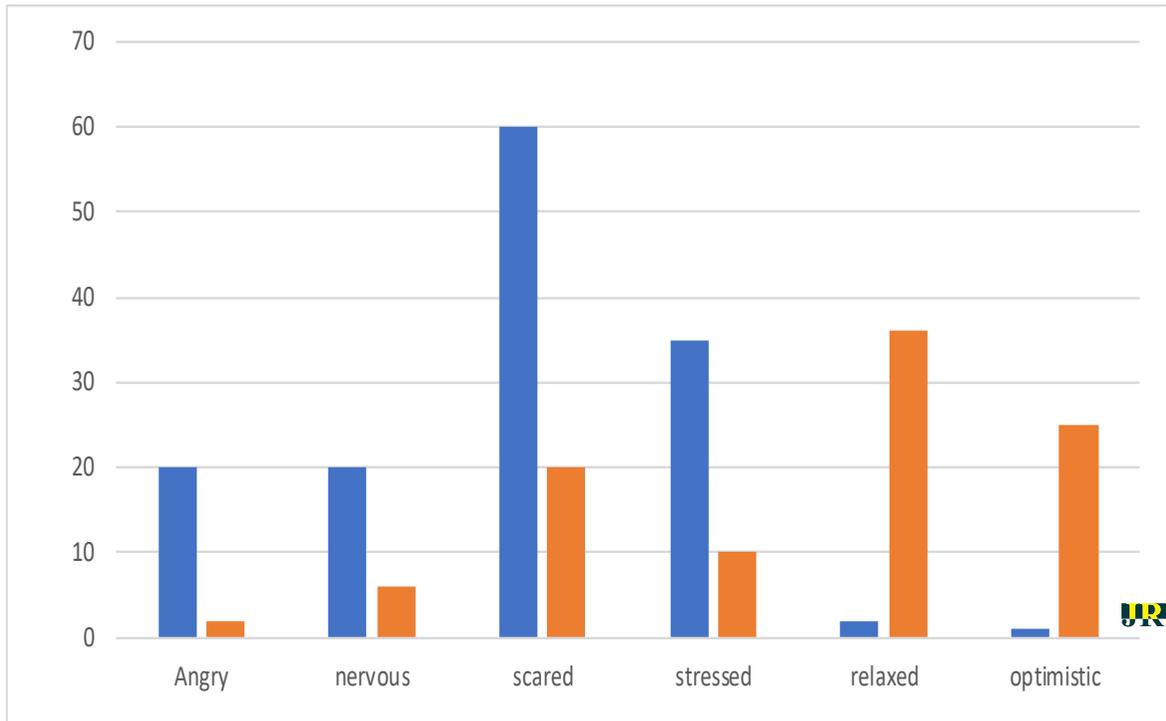


Figure 1. Changes in the general feeling/perception of the participants from the beginning of the pandemic to date [Aug-October 2020]

Footnote: Perception responses of the participants to the question: ‘How did you feel about the pandemic in Feb- March when you first heard of it? And How do you feel about the pandemic now?’ (Angry/Nervous/scared/stressed/relaxed/optimistic/happy).

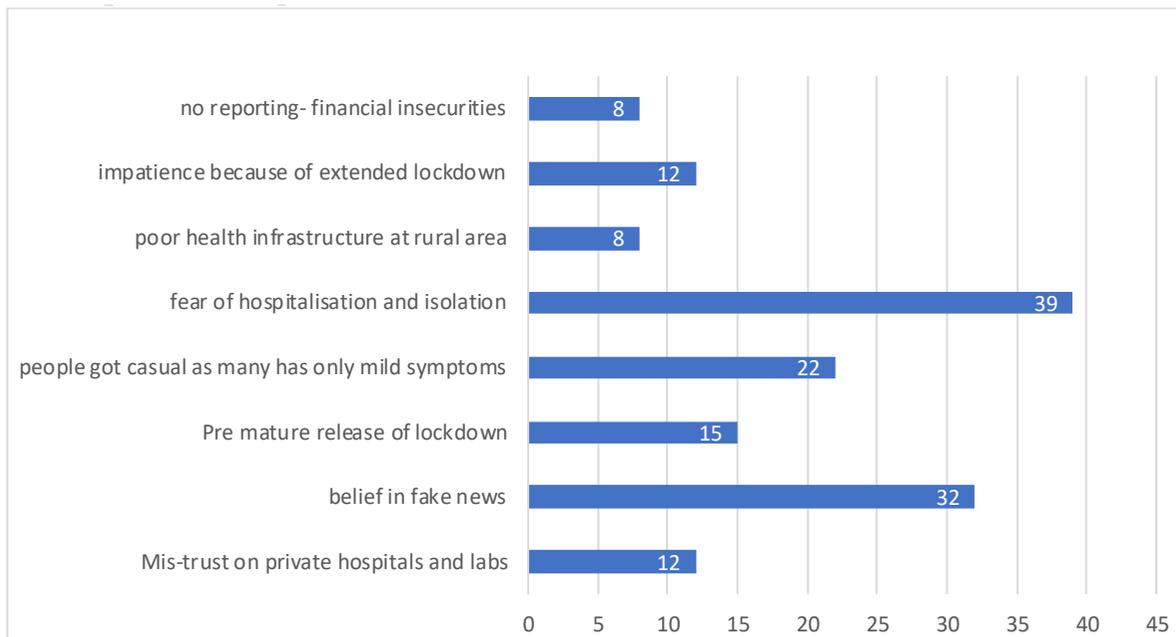


Figure 2. Various reasons for India’s rise in cases [participant’s most common responses to an open-ended question]

Footnote: Perception responses of the participants to the question: Irrespective of all the efforts taken by the government of India, what do you think is the reason for the continuous rise of cases in India? [Open ended].

Table 3. Comparison of knowledge, attitude, and practice scores among different demographic variables

Variables		Knowledge Scores			Attitude Scores			Practice Scores		
		Mean±SD	F	P	Mean±SD	F	P*	Mean±SD	F	P
Gender	Male	18.23±3.8	1.11	0.319	6.44±0.8	1.27	0.030	6.78±3.7	1.05	0.614
	Female	18.69±3.6			6.57±0.9			6.92±3.6		
Age Category (Y)	18-30	18.59±3.1	1.13	0.323	6.51±1.0	5.68	0.003#	6.49±3.6	0.06	0.934
	30-60	18.47±3.5			6.59±1.1			6.52±3.2		
	60<	17.98±3.2			6.19±0.9			6.38±3.5		
Residence	Urban	18.98±3.7	1.34	0.153	6.61±1.0	1.44	0.037	6.89±3.5	1.06	0.725
	Rural	18.05±3.2			6.11±1.2			6.50±3.6		
Education	Illiterate	17.18±2.8	5.77	<0.001†	5.98±1.2	10.01	<0.001‡	6.21±3.1	1.09	0.354
	Reading and writing ability	17.73±3.2			6.12±0.9			6.44±3.5		
	Elementary	18.61±3.5			6.51±0.9			6.86±3.3		
	Secondary and above	18.92±3.1			6.60±0.99			6.91±3.2		



*P<0.05 is statistically significant; Tukey’s post-hoc test confidence intervals: 95; # 30-60 years vs over 60 years (P=0.0022); † Illiterate vs Elementary (P=0.0064) and Illiterate vs Secondary and above (P=0.0019); ‡ Illiterate vs Elementary (P=0.0002) and Illiterate vs Secondary and above (P=0.0001); Reading and Writing ability vs Elementary (P=0.0082) and Reading and Writing ability vs Secondary and above (P=0.0024).

general advisory of using face masks, practicing social distancing, and avoiding gatherings and crowd. Another common reason was a blind belief in fake news.

5. Conclusion

Our study findings strongly suggest there are still so many areas, which should be given proper attention to stop the severity of the second wave of the pandemic. People should be made aware of the fact that a casual approach will cause more danger and harm, and there should be strict abiding to the use of masks in public places and following social distancing. Fake news can cause more harm and result in anxiety and fear. There is a need for social media users to confirm the authenticity of the information they come across as well as share on social media. This can be achieved through considering the source of information, reading beyond the headlines, checking the authors, in-depth investigation of the news article by checking the dates, examining evidence to confirm enough facts and figures, confirming fake images, searching other sources, and asking professionals when in doubt.

There is an urgency to educate people and spread the awareness of proper disposal of used masks or the washing of reusable masks. Mental health support should be provided to those with disturbed sleep and in need. Education is the only solution to curb the stigma and to encourage people to report to the institutions if they are symptomatic or have a history of exposure. The countries who are already planning about easing the stringent preventive measures should thoroughly revisit the entire situation, not only of their own country but also the entire world. In this regard, scientists, including epidemiologists (to study the characteristics of the COVID-19) and medical anthropologists (to analyze the patterns of human behaviors, e.g. rumors, that may affect the programs of preparedness), should be engaged to deeply analyze the situation and formulate comprehensive plans to deal with the pandemic.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Research Council of all India Institute of Medical Sciences, Nagpur, India,

and by the Institute Ethical Committee [Approval number: IEC/Pharmac/116/20;14/05/20].

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Authors' contributions

Study design: Prakash Gondode, Amrisha Raipure, and Bhuvanewari Balasubramanian; Data collection and analysis: Prakash Gondode, Omshubham Asai, Abhinav Lambe; Manuscript preparation: Prakash Gondode, Abhinav Lambe, Bhuvanewari Balasubramanian; Critical review: Prakash Gondode, Avinash Prakash.

Conflict of interest

The authors declared no conflict of interest.

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