



Perception and practice of community regarding nCOVID-19 prevention and opportunities for making social and environmental changes in India

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Abstract

The ongoing pandemic of nCOVID-19 had posed numerous challenges and few opportunities. To ensure the ultimate success, citizen's devotion to these control measures is important, which is generally affected by their knowledge, attitudes, and practices (KAP) to COVID-19 according to KAP theory. The present study was carried out to explore the efforts of society to curb the spread of infection, to estimate the self-evaluated stress in the different social groups, and the perception of individual risk for necessary social and environmental changes taking this time of epidemic as an opportunity. An online questionnaire was prepared using Google form. The questionnaire was then circulated openly in media via e-mails and social platforms like Facebook and WhatsApp. The study included 508 participants. The majority of the rural, as well as urban respondents, were aware of the precautions to be taken to avoid nCOVID-19 infection such as avoiding close contact with anyone, avoid touching eyes, nose, and mouth, avoid spitting in public and avoid participating in large gatherings. In response to the national strategy for preventing the spread of the infection and the stage at which it faltered, the majority (56.9%) felt that it failed in maintaining social distancing. Many awareness programs and safety behaviors have their own impact on society that improved the situation, whereas still up to 50.6 percent of the individual's perception of risk is high. Thus to conclude, the individuals were taking steps to protect themselves against the infection and recommended that the policymakers should adopt newer policies.

Key words: KAP; n-COVID-19; Social security

Introduction

Coronavirus pandemic is a big challenge to the sudden changing demographic burden, although the cultural values of the country and the strong sense of earning by sharing are going to bring great strength as the pandemic evolves. The nCOVID-19 pandemic also brought with itself the global financial crisis and thus the policy response needs to be crafted accordingly (Harari, 2020). Social, environmental and economic objectives are mutually supportive; usually, poor people are most affected by environmental disasters like pandemics as they tend to live in the more threatened areas and depend on the biodiversity of forests, coasts, or oceans for their livelihoods (Schwarzer et al, 2016).

To ensure the ultimate success, citizen's devotion to these control measures is important, which is generally affected by their knowledge, attitudes, and practices (KAP) to COVID-19 according to KAP theory (Ajilore et al, 2017; Tachfouti et al, 2012). Previous information and lessons from the world outbreak recommend that knowledge and attitudes towards contagious diseases are linked with the level of sentiment among the population, which can further confuse efforts to stop the spread of the disease (Person et al, 2004; Tao, 2003).

The nationwide lockdown and quarantine measures to control the spread of infection resulted in the closing of many units and the migration of workers to their hometown. This loss of job and lack of social security can result in mental stress. Similarly, being locked at home as a result of home quarantine and lockdown may also result in stress (ILO, 2020).

The ongoing pandemic of nCOVID-19 had posed numerous challenges and few opportunities. The challenges included controlling the spread of infection, preserving the economic growth, providing social security to the migrant workers, proper cremation of those dying due to Coronavirus infection, etc. Similarly, the opportunities were a cleaner environment due to less vehicular pollution during the lockdown period, better social support from all corners of the society, reforms in the labour laws, etc.

Social, environmental and economic objectives are mutually supportive; poor people are usually most affected by environmental disasters as they tend to live in the most threatened areas and depend on the biodiversity of forests, coasts, or oceans for their livelihoods (Schwarzer, H., et al., 2016). The issues affecting the planet and our responsibility to respond, we hope we can provide some guidelines that will help us release the Earth to clap its hands. Every program and policy will take enough time, effort, and resources towards its implementation; choices related to design program is not easy to that achieves equally environmental and social objectives at identical altitude. During disaster development programs should be focused on building productive assets particularly related to environmental sustainability such as water harvesting, tree planting, and digging irrigation canals; also oriented to women. The benefits of social protection seem to lie not only in its direct impact on food access and availability but also in how it promotes productivity and boosts local economies (Rangel, A. 2003). Every generation of parents decides how much to invest in their children. Investments include the cost of (public and private) education and the myriad of other sacrifices that parents make for their children (Huckle, J. et al., 1996). The above overviews have its direction to find out the social and environmental consequences after the lock-down.

In India, the World Bank-supported “Accelerating India’s Covid-19 Social Protection Response Programme”, aimed at integrating India’s 400-plus fragmented social-security programs for migrant workers hit by the outbreak, part of an initiative that seeks to rebalance access to safety nets between rural and urban India (Obstfeld and Posen, 2020). Research on the nCOVID-19 epidemic in India has focused on the most vulnerable groups, not only for changing their behaviour but also improving their access to basic services on a war footing with special focus on low-income communities, who are socially deprived, and economically marginalized and living in resource-poor settings in 53 million-plus urban agglomerations of India (Singh et al., 2020).

Research objectives

This study is focused on the following research objectives:

1. To explore the established efforts of society to curb the spread of infection.
2. To investigate the perception of individuals in the different social groups for necessary social and environmental changes taking this time of epidemic as an opportunity.
3. To estimate the self-reported level of stress or feeling of nervousness.
4. To estimate the self-evaluated perception of risk about the nCOVID-19 that dangerous for human life.

Methodology

This study designed as an online survey was carried out during the countrywide lockdown period extending from 7th to 31st May 2020. The calculated minimum sample size with 95% confidence level,

5% margin of error, population proportion of 50 percent, and adjusting for design effect was 482. An online questionnaire was prepared using Google form. The questionnaire included participant’s perception and knowledge about nCOVID-19, its prevention, and control, the country’s strategy to control its spread, awareness about changing environment during the pandemic, efforts needed to protect the environment, self-reported stress experienced by participants during the lockdown, and need and options for changing the social security for the workers. The online survey questionnaire was prepared in Hindi and English with survey link as <https://forms.gle/LXKHqVlwtcGjvXLBA> and <https://forms.gle/VvhTqkRF5CpUUVJGA> respectively. The validity of the questionnaire was established through expert opinions and pilot testing. The questionnaire was then circulated openly in media via e-mails and social platforms like Facebook and WhatsApp and included 508 respondents. In the context of self-reported stress felt and self-evaluated their perception of risk about the nCOVID-19 that dangerous for human life was surveyed again as first follow up by 158 individuals and second follow up by 89 individuals during unlock-2 (late July-2020) and unlock-6 (early November-2020) respectively.

Data analysis

The data downloaded in *.csv format from Google form database and analyzed using IBM-SPSS Statistics 24.0. The basic descriptive statistics summary and charts are used to explain the data. For the extensive study, tests of significance such as correlation coefficient and chi-square test.

Results

Analysis of Socio-demographic variables

Table 1: Gender-wise distribution of socio-demographic characteristics of respondents

Variables	Sub-group	Gender				Total		χ ² value
		Female (149)		Male (359)		N	%	
		N	%	N	%			
Residence	Rural	41	27.5	146	40.7	187	36.8	7.83*
	Urban	108	72.5	213	59.3	321	63.2	
Age group	11-20 Years	16	10.7	22	6.1	38	7.5	6.57*
	21-40 Years	123	82.6	291	81.1	414	81.5	
	>40 Years	10	6.7	46	12.8	56	11.0	
Type of Family	Nuclear family	95	63.8	180	50.1	275	54.1	7.87*
	Joint family	54	36.2	179	49.9	233	45.9	
Marital status	Never Married	111	74.5	220	61.3	331	65.2	8.1*
	Ever Married	38	25.5	139	38.7	177	34.8	
Religion	Hindu	131	87.9	330	91.9	461	90.8	2.00
	Non-Hindu	18	12.1	29	8.1	47	9.2	
	SC/ST	25	16.8	43	11.9	68	13.4	
Category	OBC (Non- Creamy layer)	30	20.1	138	38.4	168	33.1	19.39*
	OBC (Creamy layer)	21	14.1	36	10.1	57	11.2	
	General (EWS)	16	10.7	47	13.1	63	12.4	
	General (Non- EWS)	57	38.3	95	26.5	152	29.9	
Education	Up to Intermediate	6	4.1	16	4.5	22	4.3	8.68
	Graduation	33	22.1	65	18.1	98	19.3	
	Post-Graduation	67	44.9	156	43.4	223	43.9	
	Ph.D. (Research)	31	20.8	109	30.4	140	27.6	
	Other (Technical Certificate/Diploma)	12	8.1	13	3.6	25	4.9	
Occupation	Student	81	54.3	131	36.5	212	41.7	26.10*

Salaried Government	21	14.1	112	31.2	133	2
Salaried Private	15	10.1	47	13.1	62	12.2
Business/self Employed	4	2.7	22	6.1	26	5.1
Others (Agriculture worker, House-maker, Retired person, Social worker)	14	9.4	19	5.3	33	6.5
Non-Working	14	9.4	28	7.8	42	8.3

*Significant at 5 percent.

Table 1 depicts the gender-wise distribution of the socio-demographic characteristics of the respondents. The respondents included 149 (29.3%) females and 259 (70.7%) males. The majority (63.2%) of the respondents belonged to urban areas while 187 (36.8%) belonged to rural areas. The gender-wise analysis showed a significantly higher number of male, as well as female respondents, were from urban areas when compared with those from rural areas ($\chi^2=7.83$; d.f.=1; p=0.003). The majority (81.5%) of the respondents were from a 21-40 years age group. There was a significantly higher proportion of females in the 11-20 years age group and males in the greater than 40 years age group ($\chi^2=6.57$; d.f.=2; p=0.037). More than half (54.1%) of respondents were living in nuclear families. Similarly, significantly higher proportion of females (63.8%) was living in a nuclear family as compared to males. Further, 65.2% of the respondents were unmarried, 90.7% followed the Hindu religion, 95.7% were graduates and above, and 41.7% were students.

Details regarding knowledge, practice and perception

Table 2: Residence wise distribution of responses regarding knowledge, practice and perception about nCOVID-19 prevention

Issues about precautions, safety behaviors and perception	Residence				Total		χ^2 value	
	Rural (187)		Urban (321)		N	%		
	N	%	N	%				
Knowledge	Avoid close contact with anyone	178	95.2	314	97.8	492	96.9	2.68
	Avoid touching your eyes, nose and mouth	179	95.7	316	98.4	495	97.4	3.51
	Avoid spitting in public	177	94.7	311	96.9	488	96.1	1.56
	Avoid participating in large gatherings	179	95.7	314	97.8	493	97.1	1.81
	Have Installed Aarogya Setu App in your mobile	148	79.1	256	79.8	404	79.5	0.03
	Wear a mask/cloth to cover mouth and nose	177	94.7	307	95.6	484	95.3	0.26
Practice	Practice frequent washing of hands even if they are visibly clean	176	94.1	306	95.3	482	94.9	0.36
	Use of sanitizer frequently	128	68.5	234	72.9	362	71.3	1.14
	Drinking kaada of ginger, tulsi, black pepper etc.	129	68.9	176	54.8	305	60.0	9.87*
	Covering nose and mouth with bent elbow or a tissue when coughing or sneezing	143	76.5	268	83.5	411	80.9	3.77
	Throwing used tissues into closed bins immediately after use	150	80.2	255	79.4	405	79.7	0.04
	Spending some time in the sunlight	71	37.9	128	39.9	199	39.2	0.18
Percepti	Consulting a doctor if felt unwell (like fever, difficulty in breathing and dry cough)	152	81.2	223	69.5	375	73.8	8.53*
	Missed the fight at National social distancing	71	37.9	116	36.1	187	36.8	0.17
	Missed the fight at Social distancing	103	55.1	186	57.9	289	56.9	0.39

Missed the fight at Quarantine	61	32.6	81	25.2	142	27.9	3.20
Missed the fight at Isolation	43	22.9	76	23.7	119	23.4	0.03

*Significant at 5 percent (two tailed).

Table 2 shows the residence-wise distribution of responses regarding precautions and safety measures for preventing nCOVID-19 infection and the effectiveness of the strategy adopted. The majority of the rural, as well as urban respondents, were aware of the precautions to be taken to avoid nCOVID infection such as avoiding close contact with anyone, avoid touching eyes, nose and mouth repeatedly, avoid spitting in public and avoid participating in large gatherings.

When asked about the precautions taken by respondents, it was found that a significantly high proportion of rural residents were resorting to measures such as drinking the kaada of ginger, tulsi, black pepper, etc. ($\chi^2=9.87$; $df=1$; $p=0.001$) and consulting the doctor when felt unwell (like having fever, difficulty in breathing and dry cough) ($\chi^2=8.53$; $df=1$; $p=0.001$). When asked about the reason for the failure of the national strategy for preventing the spread of the infection, the majority (56.9%) felt that it failed in maintaining social distancing. Also, a higher proportion of rural respondents believed that the strategy failed in keeping people in quarantine.

Self-reported stress and self-evaluated risk perception

Figure 1: Level of self-reported stress felt by respondents during lock-down, unlock-2, and unlock-6.

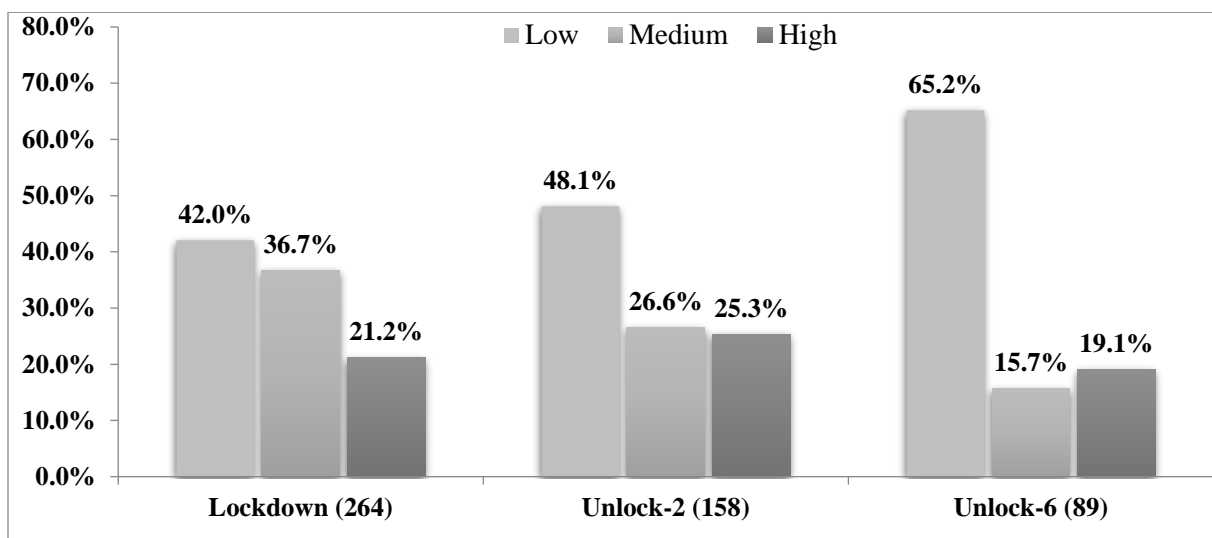
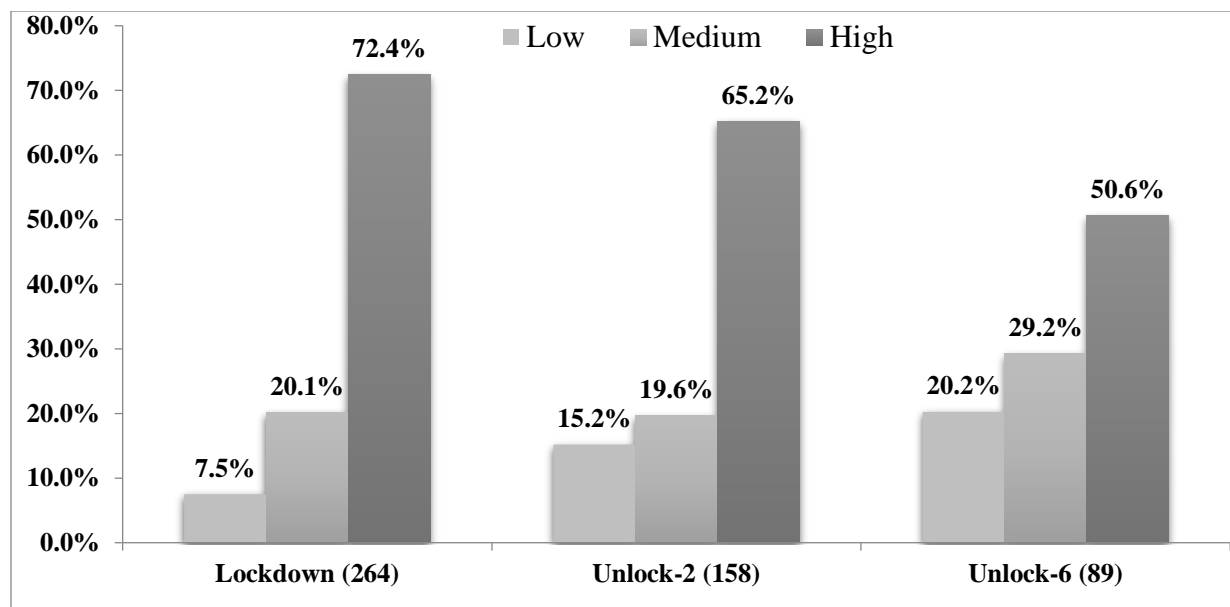


Figure 1 shows the distribution of respondents according to the self-reported level of stress or feeling of nervousness. About 42 percent of respondents self-reported their stress at the low level regarding the COVID-19 in mid lockdown which improved up to 65 percent during the unlock-6 due to a lot of efforts continuously by the public and government as the nCOVID-19 spread somewhat in a situation.

Figure 2: Level of self-evaluated risk of COVID-19 dangerous for human life by respondents during lock-down, unlock-2, and unlock-6.



From figure 2; during mid-lockdown about three-fourth of respondents self-evaluated their perception of high risk about the nCOVID-19 that dangerous for human life. Up to the period of unlock-6; many awareness programs and safety behaviors have their own impact on society that improved the situation, whereas still, 50.6 percent of an individual’s perception of risk is high.

The relation between stress and risk perception

Table 3: Correlation coefficients of self-evaluated stress with risk perception about nCOVID-19 during mid-lockdown, unlock-2, and unlock-6.

Variable	Subgroup	Mid-lockdown	Unlock-2	Unlock-6
Over all		0.196*	0.262*	0.303*
Gender	Male	0.222*	0.366*	0.274
	Female	0.105	0.231*	0.311*
Residence	Rural	0.220	0.141	0.122
	Urban	0.186*	0.330*	0.434*
Type of Family	Nuclear family	0.172*	0.335*	0.206
	Joint family	0.196*	0.191	0.398**

*Significant at 5 percent.

Table 3 shows the significant positive associated correlation coefficient between ordinal variables of self-evaluated stress with their perception of risk about nCOVID 19. During the lockdown the said pattern highly associated in males than females while during the unlock-6 this pattern changed as significantly associated in females than males. In the urban area; the association of stress with risk perception was significantly associated and the respondents from the joint family had a significant positive association with stress and perception of risk during the unlock-6.

Environmental concern

Table 4: Distribution of responses for protecting environment according to gender and residence

Actions	Gender				Residence			
	Male (359)		Female (149)		Rural (187)		Urban (321)	
	N	%	N	%	N	%	N	%
To emphasize the needs to "build back better" the environment.	266	74.1	120	80.5	140	74.9	246	76.6
To encourage plantation, especially medicinal plants, at the collective level.	302	84.1	135	90.6	159	85.0	278	86.6
To adopt vegetarian food more and more for a healthy life.	259	72.1	118	79.2	144	77.0	233	72.6
To separate waste and recycle solid waste by producing compost to be used as fertilizer.	289	80.5	127	85.2	149	79.7	267	83.2
To promote bicycle use for short distances and vehicle pools for protection of environment.	290	80.8	125	83.9	150	80.2	265	82.6
To demand from our leaders to take bold decisions and concrete actions to protect nature.	255	71.0	110	73.8	132	70.6	233	72.6
To lockdown the country is a solution to protect environment in future, also.	230	64.1	94	63.1	119	63.6	205	63.9
Allow to most of the movements through public transport	260	72.4	95	63.8	136	72.7	219	68.2
Gradually restrict to use of AC, refrigerators, etc.	122	33.9	54	36.1	49	26.2	127	39.6

The lockdown enforced by countries resulted in reduced social mobility thereby causing an improvement in the quality of air. In the study respondents, this was also assessed. Table 4 depicts the responses of the participants for improving the environment in addition to the lockdown. The common responses for having a healthy environment included emphasizing the need to "build back better" plantation, using the bicycle for short-distance travel, waste segregation and composting, vegetarian diet, and demanding bold decisions from leaders. Interestingly, the lockdown on regular intervals was also considered as an option by about two-thirds of respondents. The mean number of days of lockdown suggested by these respondents was 19.6 ± 15.6 days. The males suggested a mean of 18.5 days of lockdown while females suggested 22.3 days of lockdown in the future ($p=0.043$). In addition, when asked that what social environment changes should be done considering nCOVID 19 lockdown and social distancing as an opportunity, the respondents supported the idea of digital mode for many routine activities such as voting, telemedicine, and education.

Discussion of findings

The outbreak of the nCOVID-19 has resulted in over 20 million cases with a 3.7 percent fatalities rate; which make heavy head pressure on medical measures to combat the spread of the disease. Thus, the awareness of the society and its efforts to follow the recommended precautions is an utmost useful tool for preventing the spread of infection. The present online study highlighted that respondents were aware of the measures to be taken for preventing the spread of infection. This can be attributed to the widespread awareness activities carried out by national as well as regional governments. Similar findings were also reported in one study carried out in Bangladesh (Haque et al, 2020). But when asked about the precautions taken by them to protect themselves against infection, almost all the respondents suggested wearing the mask when going out and repeatedly washing the hands. The AYUSH (Ayurved, Unani, Siddha, and Homeopathy) Ministry has suggested an Ayurved preparation i.e. kaada for increasing the immunity. However, in our study, the kaada as a method to increase immunity and thereby protect against infection was preferred mostly by the rural respondents. Similarly, consulting a doctor in case of illness was

considered important by rural respondents suggesting they are more concerned about their health. The Government of India has launched a mobile app to track the persons infected with nCOVID-19 and their contacts and it was installed by three fourth of the respondents.

Looking at the increasing number of people infected with coronavirus, most of the respondents felt that as a citizen we failed in keeping social distancing and it resulted in the rapid spread of infection. The widespread movement of migrants from their workplaces to their home places might have given the impression that the norms of social distancing were broken to some extent. The evidence confirms that adherence to public orders about the social distancing is not stable and fluctuates with the degree of spatial and temporal differences in information and the level of risk aversion. From a policy perspective, it is important to understand that the determinants of adherence to movement restrictions for analyzing the efficacy of the public health orders in any given time and region (Yuksel M, 2020). A significantly higher proportion of rural respondents considered that the quarantine strategy failed. This can be attributed to very few cases in the rural areas during the initial days of pandemic and thereby the development of a smaller number of quarantine facilities in rural areas. In the initial stages, most of the cases were prevalent in urban areas and thus the quarantine and treatment facilities were developed there.

The study also revealed that about half of the respondents were under some degree of stress. The stress can be attributed to the apprehension for social security among the respondents. As a result of the pandemic and subsequent lockdown all industries, big and small, were brought to shut down. While bigger units have resources to revive the industry, the medium and small units face the brunt of the situation. Many migrant workers lost their job due to the closure of these units and thus might be under stress due to a lack of economic and social security. An ILO survey also suggested that 50% of the youths are under stress during the nCOVID19 pandemic (ILO, 2020). Thus an urgent need of strengthening social security was felt by the respondents. One suggested way to do this was the usage of digital platforms for most of the activities such as voting, treatment, and education so that they need not migrate from their home places.

Conclusions

The nationwide lockdown resulted in the closure of major polluting sources such as vehicles on the road, industries, crowd movement, etc. which has improved the air quality though only for a short duration. Thus, the respondents considered this as an important tool for improving the environment along with the other measures such as plantation, less use of fossil fuels, waste composting, and switching to a vegetarian diet. Finally, this study revealed that though the individuals are taking steps to protect them against the infection, they recommend that the policymakers should adopt newer policies and bring about necessary social and environmental changes to enhance the social security of the vulnerable populations.

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