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# Perception about myths and facts regarding COVID-19 pandemic infection among science and technology faculties

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## Abstract:

**BACKGROUND:** COVID-19 was declared as pandemic by the WHO in March 2020. Social distancing and hand hygiene is advised during the pandemic to contain the spread of the virus. Rapid sharing of scientific information in an extraordinary way is the characteristic of the COVID-19 pandemic. There may be gap between information provided and received. Perception and practices in the community regarding handling materials need to be pointed out. The aim of this study was to assess the perception about myths and facts and change in the practices before and during the COVID-19 pandemic among the faculties.

**MATERIALS AND METHODS:** A cross-sectional survey was conducted during May–June 2020 among the faculties of Science and Technology. By multistage sampling technique, five districts from Maharashtra state and then one institution from each district was selected. A questionnaire was shared by Internet to institutional faculties. Descriptive and inferential statistics (Chi-square test) is applied.

**RESULTS:** Out of 276 faculties, 248 had responded. Most of the faculties were aware about basic preventive measures for COVID-19 infection. However, 25% of the faculties were unaware about the safe physical distance. Eating garlic and pepper protect against COVID-19 as per 63 (25.3%) and 59 (23.9%) faculties, respectively, was effective, whereas 56.8% of participants did not believe so. 93 (37.5%) respondents believed that respiratory function ultimately indicates the presence or absence of disease. About 95% of participants adopted new hygienic practices during the pandemic ( $P < 0.0001$ ).

**CONCLUSION:** COVID-19 can spread rapidly if the basic preventive measures are ignored by the small proportion of unaware people. Hence, awareness needs to be improved. People have adapted to new hygienic practices for handling the material during the pandemic.

## Keywords:

COVID-19 pandemic, faculties, myths and facts, perception, practices, science and technology

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## Introduction

Novel coronavirus arose in Wuhan, China in December 2019<sup>[1]</sup> and rapidly spread all over the world as pandemic, declared by WHO in March 2020.<sup>[2]</sup> The disease shows its potential to create complicated scenarios not only at the local level but at the global level, though it is

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Severe Acute Respiratory Syndrome as other virus infection.<sup>[3]</sup> The main route of transmission is through respiratory droplets but infection can spread by inoculation of the virus on the mucosal surface of eyes, nose, and mouth through contaminated hands.<sup>[4,5]</sup> Handling contaminated objects is also promoting infection spreading.<sup>[4]</sup> The rate of transmission of Covid infection was estimated to be 1.5–3.5 form infected

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individuals.<sup>[6]</sup> Mass gathering leads to close contacts and COVID-19 infection spreading, hence social distancing is advised.<sup>[3]</sup> For the same, the Prime Minister of India announced the phase-wise lockdown since March 22.<sup>[7]</sup> This affects many dimensions of life from basic and essential to advance and elective such as education, health care, economy, production (GDP), transport, corporate, labor, agriculture, leisure, and many more. Hence, this Global crisis brought together scientists, policymakers, and administrators to fight against it.<sup>[8]</sup> To control COVID-19 pandemic, Government called attention toward the responsibility of each individual in the community, i.e., adopting health-protective behaviors.<sup>[9]</sup>

As no specific antiviral drug or vaccine is available till date, nonpharmaceutical interventions would be declared as key preventive measures. These included various practices such as physical distancing, hand hygiene, cough etiquette, covering nose and mouth, isolation, and quarantine have established their relevance in preventing the spread.<sup>[10-13]</sup>

Alcohol-based sanitizer is found effective to kill virus after 20 s rub.<sup>[4]</sup> Virus can be present live on the surface of various objects or materials for a different period of time.<sup>[14,15]</sup>

There is a need to assess the perception and practice in the community regarding handling materials which commonly includes edible and nonedible things. More concern arises regarding hygiene when these materials acquired from market.

World Health Organization and Ministry of Health and Family Welfare have published many pamphlets, handouts, or posters to raise community awareness regarding the spread of disease and effective preventive measures to distinguish between myths and facts.<sup>[16]</sup> Most of the time, this information is accessed by health personnel, administrator, scientist, or policymakers, unless it is purposively required by other person.

Rapid sharing of scientific information in an extraordinary way is the characteristic of COVID-19 pandemic. Social media is playing an extensive role in providing information of every aspect of the COVID-19 pandemic. Stakeholders are also sharing all the facts and myths regarding the pandemic on the social platform including most of the scientific journals building data for freely available.<sup>[6,8,17,18]</sup>

Study in China showed the stability of SARS-CoV-2 on stainless steel, wood, glass, ceramics, atex gloves, surgical masks, and plastic for 7 days.<sup>[19]</sup> COVID-19 virus was observed to be viable up to 28 days at 20°C on

common surfaces such as stainless steel glass, and both polymer and paper currency notes.<sup>[20]</sup> Coronavirus can be found viable on plastic and stainless steel up to 72 h. Whereas on cardboard and copper it was detectable up to 24 h and 4 h, respectively.<sup>[15,21,22]</sup> Researches indicated that virus is viable on various surfaces at an inconsistent time period and may be due to the temperature effect.<sup>[20]</sup> Hence, this suggests that people may acquire the COVID infection through aerosol transmission and after touching contaminated objects.

There may be any gap between information provided and received. The level of awareness in the community needs to be pointed out. Anxiety and fear regarding the spread of the corona virus or genuine responsibility toward curtail the spread may be the reason for adopting some preventive practices. Teachers play a vital role in sharing accurate information and science-based facts about COVID-19. This will help diminish students' fears and anxieties about the disease and support their ability to cope with any secondary impacts in their lives.

Hence, we made an attempt to conduct the survey among the faculty members of Science and Technology to know the level of perception about Myths and Facts regarding Novel Cov-19 infection and practices adopted for fighting against this pandemic.

To study the knowledge among faculties of Science and technology profession about preventive measures to control the spread of the Novel corona virus.

To assess the perception about myths and facts regarding COVID-19 pandemic infection among faculties.

To find out the change in the practices followed by faculties before and during the COVID-19 pandemic.

## Materials and Methods

### Study design and settings

This cross-sectional survey was conducted among the faculty members of various institutions of Science and Technology of Maharashtra state during the period of May-June 2020.

### Study participants and sampling

Multistage sampling method was used. Five districts were randomly selected from Maharashtra state and those are Amravati, Nagpur, Nasik, Pune, and Wardha. Then one of the Science and Technology institutions was randomly selected from each district. Permission and lists of faculties were obtained from the respective authority of these institutions. A total of 276 faculties were communicated by Internet and telephone.

### Data collection tool and technique

By keeping view of study objectives, the survey questionnaire was prepared by investigating team members by referring to the guidelines published by the Ministry of Health and Family Welfare, Center for Disease Control, WHO-Advice for Public updates reflecting prevention and control measures of COVID-19 pandemic along with myths and facts.

Data collection tool covered the questions for “awareness about spreading of COVID-19 infection,” “Myths and facts about COVID-19 pandemic infection prevention and control measures,” “Change in particular practices for managing materials brought from outdoor before and after the declaration of COVID-19 pandemic or coins and currency notes received from outdoor.”

Validity and Reliability-This tool are reliable for comparable settings and alike epidemiological pandemic situations. The study participants were from a particular education class and good socioeconomic status. This survey has high internal validity as the results of this survey are applicable to a similar group. However, survey findings are can't be generalized.

The purpose of the survey was discussed and confidentiality of information was ensured among participants. Survey questionnaire was shared to about 276 faculty members these institutes through Internet after informed consent. The descriptive statistic in the form of frequency and percentage was estimated. Z-test has been applied to analyze adopted practices before and during the COVID-19 pandemic. Results were compared using *P* value.

### Results

Out of 276 faculties to whom the survey questionnaire was shared, 248 faculties had responded (response rate = 89.85%). Out of these, 156 (63%) were male and 99 (40%) were female faculty members. Most of the faculties, i.e., 149 (60%) were from the urban area, 131 (52.8%) were from the age group 25–35 years, followed by 77 (31%) participants from 35 to 45 age group. Out of 248 respondents, 138 (55.7%) were residing in the red zone as declared for the COVID-19 pandemic. [Table 1]

Out of various modes of spread of coronavirus infection in the community, maximum i.e., 214 (86.29%) responses were noted for “Close contact with infected person” and followed by 197 (79.44%) responses for “through coughing/sneezing.”

“Mass gathering” and “Contact with contaminate objects” were also acknowledged as a channel for

**Table 1: Sociodemographic and basic information of the study participants**

| Variable   | Frequency <i>n</i> =248 | Percentage |
|--|-------------------------|------------|
| Age (Years)  |                         |            |
| 25-35  | 131                     | 52.8       |
| 35-45  | 77                      | 31         |
| 45-55  | 36                      | 14.5       |
| >55  | 4                       | 1.6        |
| Gender   |                         |            |
| Male   | 156                     | 63         |
| Female   | 92                      | 37         |
| Residential Area   |                         |            |
| Rural  | 99                      | 40         |
| Urban  | 149                     | 60         |
| City or town declared as risk zone of COVID-19 by Government |                         |            |
| Red  | 138                     | 55.7       |
| Orange   | 54                      | 21.8       |
| Green  | 45                      | 18.1       |
| Nothing  | 11                      | 4.4        |
| Teaching Experience (Years)                                  |                         |            |
| 1-5  | 58                      | 23.4       |
| 5-10   | 51                      | 20.6       |
| 10-15  | 73                      | 29.4       |
| 15-20  | 31                      | 12.5       |
| >20  | 35                      | 14.1       |

spreading of Coronavirus infection by 187 (75.4%) and 173 (69.76%) faculty members, respectively. Though less, but responses were also noted for transmission of COVID-19 disease through houseflies 29 (11.69%), mosquitoes 25 (9.68%), and domestic animals 20 (8.06%).

When asked about the most essential preventive measure that should be adopted by everybody, 166 (66.9%) teachers responded social distancing, while 28 (11.2%) use of mask, 23 (9.23%) hand hygiene and 19 (7.66%) responded cough etiquettes [Table 2].

About 91 (36.6%) faculties were aware regarding safe social distance to be maintained to prevent COVID-19 infection. On the other hand, one foot and two feet social distance is sufficient to prevent coronavirus infection was opined by 42 (16.9%) and 21 (8.5%) faculties. However, more safe distance, i.e., four feet or more than it, was acknowledged by 19 (7.7%) and 76 (30.6%) faculties [Figure 1].

Almost all the faculties were well aware about the materials such as alcohol-based hand rub (sanitizer), Soap and water or liquid hand wash can be used for hand hygiene.

Regarding minimal time for alcohol-based hand rub to kill Cov-19 virus, we received responses by, 199 (80.2%), 28 (11.4%) and 7 (2.8%) participants for 20, 30 and >30 s respectively [Figure 2].

Older people are more vulnerable to become severely ill with Coronavirus disease and 226 (91.13%) participants had replied it correctly. Whereas 9 (3.63%) participants responded to younger people and 8 (3.22%) responded to children age group as more risky group for poor prognosis. Only 5 (2.02%) faculties were unaware about severity of prognosis in particular age group [Figure 3].

It is noted that, most of the faculties i.e., 231 (93.1%) and 204 (82.3%) were aware about the nonavailability

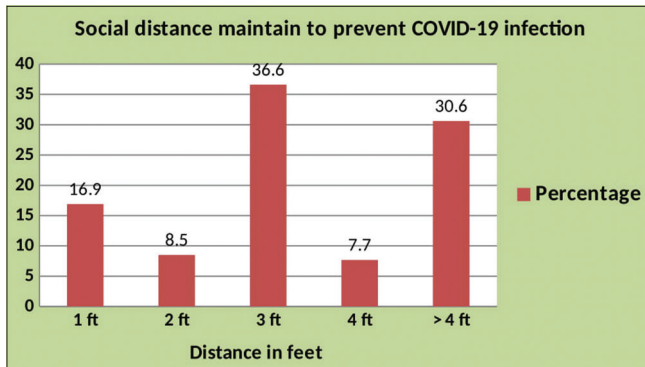


Figure 1: Response of participants regarding specific social distance to be maintained to prevent COVID-19 infection

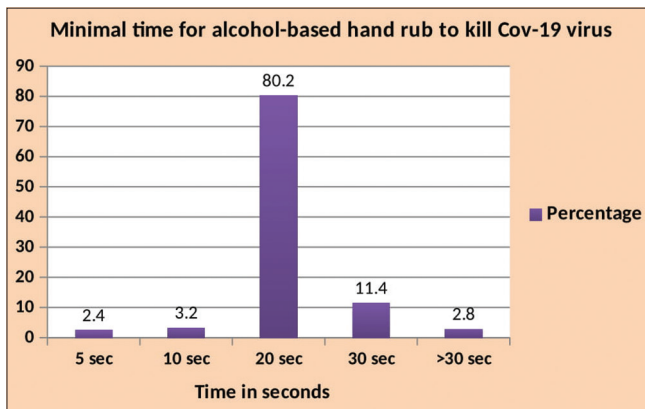


Figure 2: Responses of participants for minimal time for alcohol-based hand rub to kill Cov-19 virus

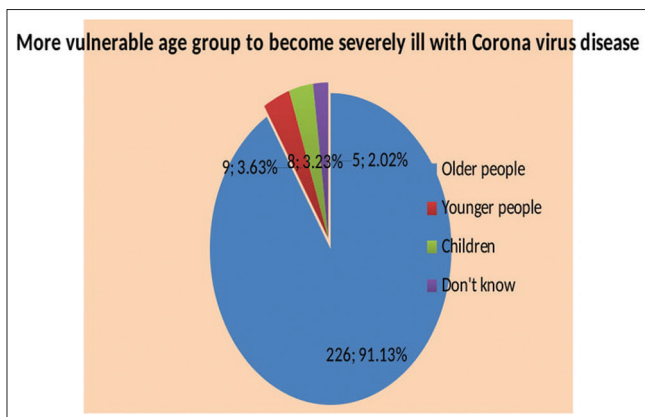


Figure 3: Perception about vulnerable age group for severity with corona virus disease

of effective vaccines and medicines respectively for preventing or treating novel coronavirus infection. About 231 (93.1%) were well-known that drinking alcohol does not protect against COVID-19.

We also assessed opinion regarding some edible things such as garlic and black pepper to prevent COVID-19 disease. According to 63 (25.3%) participants eating garlic is helpful and as per 141 (56.8%) participants, it does not work so, whereas, 44 (17.8) participants didn't opine for the same. About 59 (23.9%) faculties believed that adding pepper to meals protect against COVID-19 and 140 (56.4) believed that it does not have such protective effect, whereas 49 (19.7%) did not have any opinion about this.

As per 116 (46.8%) participants, coronavirus disease can be transmitted in areas with hot and humid climates and 119 (48%) participants thought that there is no role of such climates in disease transmission.

During this survey, practices like hot bath, self-exposure to the sun or high temperatures (>25°C) and regularly rinsing the nose with saline help to prevent the new coronavirus disease according to 86 (34.7%), 82 (33%), and 59 (23.8) participants respectively, while 130 (52.4%), 139 (56%) and 145 (58.4%) participants, respectively, did not believe so. About 32 (12.9%), 27 (11%) and 44 (17.8%) participants could not opine on these three preventive measures.

Hand dryers are effective in killing the new coronavirus according to 57 (23%) faculties and 162 (65.3%) did not considered so; on the other hand, 29 (11.7%) were neutral about its role. Maximum, i.e., 225 (90.8%) participants expressed their opinion that cold weather or snow does not helpful in killing the new coronavirus and 13 (5.2%) participants thought that cold weather has killing effect on virus.

When we assessed that, wearing rubber gloves for outdoor activity is safer than frequent hand washing, then we got near about equal positive and negative responses, i.e., 126 (50.8) and 120 (48.4), respectively.

It is reflected that about 93 (37.5%) faculty members considered that being able to hold your breath for 10 s or more without coughing or feeling discomfort is a sign of free from the coronavirus disease (COVID-19) and most of the teachers, i.e., 126 (50.8%) thought that it [Table 3].

In our study, we tried to assess the various practices for managing materials brought from outdoor and is there any difference or change in these practices before and during the COVID-19 pandemic.

Before and during the pandemic, the practice of keeping materials just purchased from market has been assessed.

**Table 2: Awareness about spreading of COVID-19 infection among the Science and COVID Technology Faculties**

| Mode of Spread of COVID-19 infection | *Infection spread in the community/ human (%) | Preventive measures to control spread of COVID-19    | Most essential preventive measure should be adopted by everybody |
|--------------------------------------|---|--|--|
| Through coughing/sneezing            | 197 (79.44)                                   | Hand hygiene   | 23 (9.23)  |
| Contact with contaminated objects    | 173 (69.76)                                   | Cough etiquettes                                     | 19 (7.66)  |
| Mass gathering                       | 187 (75.4)                                    | Social distancing                                    | 166 (66.9)   |
| Close contact with infected person   | 214 (86.29)                                   | Use of mask  | 28 (11.2)  |
| Transmitted through houseflies       | 29 (11.69)                                    | Avoid touching eyes & nose                           | 8 (3.2)  |
| Transmitted through mosquitoes       | 25 (9.68)                                     | Use of Goggles/spectacles                            | 2 (0.8)  |
| Transmitted through domestic animals | 20 (8.06)                                     | Spraying bleach or another disinfectant on your body | 2 (0.8)  |

\*Multiple responses are allowed

**Table 3: Assessment of myths and facts about COVID-19 pandemic infection among Science and technology faculties**

| Myths and facts about COVID-19 pandemic  | Yes (%)    | No (%)     | Don't know (%) |
|--|------------|------------|----------------|
| Effective vaccine Available  | 13 (5.2)   | 231 (93.1) | 4 (1.7)        |
| Specific medicines to prevent or treat COVID 19 Disease  | 30 (12.1)  | 204 (82.3) | 14 (5.6)       |
| Drinking alcohol protect against COVID-19  | 4 (1.7)    | 231 (93.1) | 13 (5.2)       |
| Eating garlic help to prevent infection with the new corona virus  | 63 (25.4)  | 141 (56.8) | 44 (17.8)      |
| Adding pepper to your soup or other meals protect you against COVID-19   | 59 (23.9)  | 140 (56.4) | 49 (19.7)      |
| Corona virus disease can be transmitted in areas with hot and humid climates.  | 116 (46.8) | 119 (48)   | 13 (5.2)       |
| Taking hot bath prevent the new corona virus disease.  | 86 (34.7)  | 130 (52.4) | 32 (12.9)      |
| Exposing you to the sun or to temperatures higher than 25C degrees prevent the corona virus disease  | 82 (33)    | 139 (56)   | 27 (11)        |
| Regularly rinsing nose with saline help to prevent infection with the new corona virus   | 59 (23.8)  | 145 (58.4) | 44 (17.8)      |
| Hand dryers are effective in killing the new corona virus  | 57 (23)    | 162 (65.3) | 29 (11.7)      |
| Cold weather and snow kill the new corona virus.   | 13 (5.2)   | 225 (90.8) | 10 (4)         |
| Wearing Rubber gloves for outdoor activity is more safe than frequent hand washing   | 126 (50.8) | 120 (48.4) | 2 (0.8)        |
| Being able to hold your breath for 10 seconds or more without coughing or feeling discomfort, it means you are free from the corona virus disease (COVID-19) | 93 (37.5)  | 126 (50.8) | 29 (11.7)      |

Before pandemic 122 (49.13%), 212 (85.48%), 187 (75.4%) and 239 (96.37%) participants were kept vegetables, packed or unpacked groceries or stationery as it is. Whereas, during pandemic similar practices were followed by very few participants, ranges from 8 to 33 (3.2-(13.3%) and this difference is statistically significant ( $P < 0.0001$ ).

During this COVID-19 pandemic period, various practices were adopted for cleaning vegetables such as washing with soap and water, warm water, cold-salt water, and hot-salt water by 30 (12.1%), 103 (41.5%), 49 (19.7%), and 99 (39.9%) faculties. While, very few i.e., 2–4 (1%–2%) faculties were following the above practice before pandemic. The difference of all these practices before and during pandemic is statistically significant ( $P < 0.0001$ ).

It is revealed that, during this pandemic significantly high number of faculties (range 210–215; 84.7–86.7%,  $P < 0.0001$ ) had taken extra care for materials, grocery packets, unpacked groceries, or stationeries brought from the market, such as wash with plain cold water, soap and water, warm water, cold-salt water and hot-salt water and keep in sunlight for few hours. Hardly few 6 (2.4%) faculties were used to follow such practices before pandemic [Table 4].

We also assessed any change in habits of handling money received from others in the form of coins of banknotes. Study results explored the significant difference in way of managing coins and currency notes before and during COVID-19 pandemic. Almost all the faculty members 223 (90%) had taken precaution one or other way such as keeping money separately or in sunlight for some time [Table 5].

## Discussion

On January 30, 2020, WHO alarmed the spread of Novel Cov-19 infection as public health emergencies of international concern.<sup>[23]</sup> One of the impacts of lockdown, i.e., social distancing is the decrease in the number of cases.<sup>[24]</sup>

Along with lockdown, individual hygiene recommended by WHO and CDC could slow down the outbreak. Though infection will still continue to grow peak can be flattened.<sup>[25,26]</sup>

Novel coronavirus is identified as infectious even though the patient is asymptomatic during the incubation period, though respiratory viruses are characteristically contagious in symptomatic cases.<sup>[27,28]</sup>

**Table 4: Change in particular practices for managing materials brought from outdoor before and after declaration of COVID-19 pandemic**

| Adopted practices                        | Managing materials brought from Market before and during COVID pandemic period* |            |                 |            |                           |            |            |                |                    |            |                 |        |                      |        |        |        |
|--|---|------------|-----------------|------------|---------------------------|------------|------------|----------------|--------------------|------------|-----------------|--------|----------------------|--------|--------|--------|
|  | Vegetables  |            | Z (P)           |            | Packed Groceries/ packets |            | Z (P)      |                | Unpacked Groceries |            | Z (P)           |        | Stationery materials |        | Z (P)  |        |
|  | Before  | During     | Before          | During     | Before                    | During     | Before     | During         | Before             | During     | Before          | During | Before               | During | Before | During |
| Wash with plain cold water               | 96 (38.7)   | 71 (28.6)  | 2.37 (0.1732)   | 28 (11.3)  | -3.91 (0.04)              | 15 (6.04)  | 24 (9.7)   | 2.25 (0.13)    | 4 (1.61)           | 12 (4.8)   | -2.0 (0.042)    |        |                      |        |        |        |
| Wash with soap & water                   | 4 (1.61)  | 30 (12.1)  | -4.62 (0.0001)  | 54 (21.7)  | -7.78 (0.0001)            | 0 (0)      | 18 (7.2)   | 18.68 (0.0001) | 5 (2)              | 22 (8.9)   | -3.36 (0.0008)  |        |                      |        |        |        |
| Wash with warm water                     | 2 (0.8)   | 103 (41.5) | -11.10 (0.04)   | 50 (20)    | -7.45 (0.0001)            | 0 (0)      | 40 (16.1)  | 43.51 (0.0001) | 0 (0)              | 22 (8.9)   | -4.7 (0.0001)   |        |                      |        |        |        |
| Wash with cold-salt water                | 4 (1.61)  | 49 (19.7)  | -6.54 (0.0001)  | 18 (7.2)   | -4.32 (0.0001)            | 0 (0)      | 18 (7.2)   | 18.68 (0.0001) | 0 (0)              | 13 (5.2)   | -3.65 (0.0003)  |        |                      |        |        |        |
| Wash with hot- salt water                | 0 (0)   | 99 (39.9)  | -11.12 (0.0001) | 30 (12.1)  | -5.65 (0.0001)            | 0 (0)      | 27 (10.8)  | 28.55 (0.0001) | 0 (0)              | 22 (8.9)   | -4.7 (0.0001)   |        |                      |        |        |        |
| Keep in sunlight for few hours           | 4 (1.61)  | 135 (54.4) | -13.09 (0.0001) | 158 (63.7) | -11.84 (0.0001)           | 46 (18.4)  | 175 (70.5) | 135.8 (0.0001) | 0 (0)              | 65 (65.3)  | -8.64 (0.0001)  |        |                      |        |        |        |
| Any other                                | 11 (4.4)  | 15 (6.04)  | -0.80 (0.42)    | 6 (2.4)    | -2.46 (0.013)             | 0 (0)      | 9 (3.6)    | 9.16 (0.0002)  | 0 (0)              | 5 (2)      | -2.24 (0.02)    |        |                      |        |        |        |
| Keeping as it is/nothing special         | 122 (49.13)   | 8 (3.2)    | 11.64 (0.0001)  | 29 (11.7)  | 16.44 (0.0001)            | 187 (75.4) | 24 (9.7)   | 219.1 (0.0001) | 239 (96.37)        | 33 (13.3)  | 18.59 (0.0001)  |        |                      |        |        |        |
| Apply sanitizer over packets of material | NA  | NA         | -               | 145 (58.5) | -14.31 (0.0001)           | NA         | NA         | -              | 0                  | 151 (60.9) | -14.73 (0.0001) |        |                      |        |        |        |

\*Multiple responses are allowed

Study participants were well aware about the mode of transmission of coronavirus infection in the community, i.e., respiratory aerosols emitted through coughing and sneezing (79.44%). Very few faculties i.e., 8%–11% thought that coronavirus infection may be transmitted by vectors such as houseflies or mosquitoes or domestic animals. This concern may be due to the information on social media about the majority of the earlier cases in China were linked to the seafood market.<sup>[28]</sup>

Most of these faculties (86.29%) had recognized that close contact with the infected person is a high risk for getting infected.

Minimum 1 m physical distance is associated with much lower risk of getting infected by the COVID-19 virus. Based on mathematical modeling, protection will be more if the distance is >1 m.<sup>[13]</sup> For the general public, it is very essential to maintain the physical distance >1 m, as the public may come in close contact with the mild symptomatic or asymptomatic person in the incubation period. Hence, social distancing is the most important preventive measure and it was acknowledged by 166 (66.9%) participants.

One-fourth (25.4%) of the participants were found unaware about the safe physical distance. Only 36.6% faculties pointed out minimum (1 meter or 3 feet) social distance to be maintained; though other faculties i.e., 38.3% had chosen the safer side of maintaining the social distance >3 feet.

Minimal time required for alcohol-based hand rub to kill Cov-19 virus was correctly recognized by most of the teachers.

Study participants were well aware that effective medicine and vaccines are not yet available. Alcohol-based sanitizer or disinfectants are very effective in killing novel coronavirus but consumption of alcohol in any form does not have any protective effect against coronavirus disease. Neither on the breath kills the virus in the air nor stimulates the immune system.<sup>[29,30]</sup> Participants had a similar attitude towards the role of alcohol. WHO also suggested to close bars, night clubs, restaurants and other places where people gather to consume alcohol, as these movements will promote increase the risk of transmission of the virus.

There is no evidence regarding the protective role of garlic or pepper against COVID-19 disease.<sup>[31]</sup> More than half (56%) of faculties admitted so. However, one-fourth of the faculties still believed that eating garlic and pepper has some protective role.

**Table 5: Practices before and during COVID-19 pandemic for managing with coins and currency notes received from outdoor**

| Manage with Coins and currency notes received from others (ex-market)* | Practices  |            | Z test for difference between proportion & P |
|--|------------|------------|--|
|  | Before     | During     |  |
| Keep separate from usual money purse                                   | 4 (1.61)   | 172 (69.3) | -15.62 (0.0001)                              |
| Keep in sunlight for few hours   | 0 (0)      | 140 (56.4) | -13.96 (0.0001)                              |
| Any other  | 4 (1.61)   | 50 (20.1)  | -6.63 (0.0001)                               |
| Nothing special  | 240 (96.8) | 25 (10.1)  | 19.35 (0.05)                                 |

\*Multiple responses are allowed

The difference of opinion has been found in various literature reviewed regarding the effect of temperature on coronavirus infection. As per meteorological studies,<sup>[32,33]</sup> there were reduction in new cases and deaths due COVID-19 disease in various countries and states on an increase in temperature and relative humidity. Whereas, a study conducted in China highlighted on April 2020 that relationship between COVID-19 infectivity and temperature is uncertain and there is a need to evaluate further at the global level.<sup>[34]</sup>

As per WHO, corona virus disease can be transmitted in any weather. Taking hot bath or exposing to temperatures higher than 25°C, or spraying alcohol or chlorine throughout the body does not prevent the new coronavirus disease.<sup>[16,35,36]</sup>

Similar uncertainty was pointed out among the studied participants. Less than half of the participants were sure about the protective role of high temperature, whereas about half of the participants commented in other way. Very few faculties were unknown about the specific relation of temperature and COVID-19. On the other hand, most of the faculties (90%) thought cold weather and snow kill the new coronavirus.

As per the WHO, holding breath for 10 s or more without coughing or feeling discomfort, it does not mean a person are free from the coronavirus disease. Respiratory symptoms are very common as the Novel coronavirus is a respiratory tract virus. However, people must know that COVID-19 disease can be present in various other than respiratory symptoms like fever, easy fatigability, diarrhea, and headache.<sup>[37]</sup>

There are controversies regarding how long the Novel coronavirus will last on various types of surfaces or materials.<sup>[38]</sup>

When aerosols and surface stability of SARS-CoV-2 were analyzed, it is found that the virus can remain viable in the air for up to 3 h, on copper surface up to 4 h, cardboard-24 h, and plastic and stainless steel up to 72 h. There is no evidence about the stability of the novel corona virus on edible substances, though in the early phase of the epidemic in China, evidence were recorded for seafood transmission in wet market areas.<sup>[28]</sup>

However, World Health Organization guided the community to wash vegetables and fruits thoroughly before eating and maintain hand hygiene while eating.<sup>[11]</sup>

Public may be highly suspicious of the survival of corona virus over the surface. Hence people might be choosing the safer side by taking extra care of materials both edible and nonedible things especially brought from the outdoor (market). This study explored that significantly high percentage of participant adopted new practices of cleaning different material (vegetables, groceries or stationeries) like washing with salt-water, soap-water, warm-water, or keeping in sunlight. The practice of keeping material as it is brought from outdoor without special cleaning process was observed to be significantly common before than during the COVID-19 pandemic period.

Comparable as well as variety of behavioural changes was observed in the other countries. Psychological and Behavioral Response to the COVID-19 Pandemic studied in Karachi, Pakistan by Balkhi *et al.*<sup>[39]</sup> observed that participants were feeling anxious (62.5%), and feared going to out in marketplaces (88.8%). They cancelled plans for outing for social gathering or any other purpose (84.5%). They adopted practices like washing hands more often (87%), reduced physical contact (86.5%), and almost all participants were concerned for the health of their family members (94.5%).

During national level survey in Singapore about the behavioural changes observed that, almost all the participants (97%) have undertaken at least one infection control measure such as wearing mask, hand hygiene, social distancing, changing outdoor plans, or avoiding public transport, choose online shopping, stored up more household and food supplies etc.<sup>[9]</sup>

Similarly in China, psychological status and behavior changes observed during this pandemic among 70.9% of respondents and most commonly used prevention measures were avoiding contact (98.0%), wearing a mask (83.7%), and hand hygiene (82.4%).<sup>[40]</sup>

Akdeniz *et al.* found that protective behaviours towards COVID-19 outbreak were adopted by University students of Turkey; such as attention for handwashing (90%),

social isolation (97%), and room ventilation (95%). Though the practice of wearing the mask is observed to be low (50%).<sup>[41]</sup> These results are matching with attitudes observed among the present study (Indian) participants. According to these respondents, the most essential preventive measure should be adopted by everybody is to maintain the social distancing (66.9%), followed by other measures use of mask (11.2%) and hand hygiene (9.23%).

A collaborative campaign was run by the Food Safety and Standards Authority of India (fssai), Food and Agriculture Organization of United Nation (FAO), Eat Right India in coordination with the WHO on June 7, 2020, on the occasion of World Food Safety Day. In this campaign, various posters and pamphlets, handouts were exhibited out through online platform to raise the awareness level concerning food safety.<sup>[31,42-44]</sup>

Significantly high number of studied participants adopted hygienic practices for handling the currency notes or coins as a precautionary measure to avoid getting the infection. On review, no evidence was confirmed or disproved the corona virus transmission mode through coins or currency notes. As we know, respiratory droplets or aerosols expelled out from an infected person can contaminate the surface or material. As per the WHO, better we should maintain hand hygiene by washing or applying sanitizer after touching such suspicious that frequently touching surfaces or objects including the currency.<sup>[45]</sup>

### Limitation

External validity of this survey is limited as results are valid for a particular education class.

Recommendation: Further studies can be conducted in other socio-demographic categories by using this data collection tool. Such a survey in other settings (lower class or other literacy level) can be helpful to assess the prevention and control measures adopted and their perception for the COVID-19 pandemic.

### Conclusion

Studied participants were aware with the basic knowledge regarding novel corona virus disease and pandemic such as mode of infection spread in the community and essential required preventive measures to control its transmission.

Social distancing is the prime preventive measure to control the disease transmission but one-fourth of the teachers were unaware about the safe social distance, i.e., 3 feet. Disease like COVID-19 can be spread rapidly if the basic preventive measures get ignored

by this small quantity (one fourth) of people in the community which will affect at large scale.

Similarly, one-fourth of the participants believed that garlic and pepper in the meal have a protective effect, whereas there are no evidence published or shared by WHO regarding its specific role. Uncertainty among the participants about the role of temperature was explored in through this study. Though some evidence suggested the negative correlation between temperature and humidity and COVID-19 disease spread or prognosis, whereas WHO guided no specific role of weather on coronavirus infection.

Clinical presentation of novel Cov-19 disease varies from person to person, though respiratory symptoms are common. However, good breathing capacity does not rule out the presence of COVID-19 infection. Respondents believed that respiratory function ultimately indicates the presence or absence of disease.

Significant high number of studied participants adopted new practices during pandemic for managing the materials brought from outdoor, which were very rare or equal to none before pandemic. They might be suspicious of the survival of novel corona virus over these surfaces. However FSSI, FAO, and WHO have guided to maintain hand hygiene and washing of fruits and vegetables with cold water. This information is needed to share on social platform which are widely used. No specific advices regarding stationeries or groceries. Still, people have adopted new hygienic practices. All these practices may be helpful not only in preventing the transmission of coronavirus infection but other infections too. Our team has also shared some of the authentic links and educational materials among the participants to clear the myths and facts regarding COVID-19 disease provided by WHO, FSSI and the Ministry of Health and Family Welfare, India.

### Ethical clearance

Is obtained from Institutional Ethics Committee.

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### Conflicts of interest

There are no conflicts of interest.

### References

1. Wu YC, Chen CS, Chan YJ. The outbreak of COVID-19: An overview. J Chin Med Assoc 2020;83:217-20.



2. World Health Organization. Novel Coronavirus (2019-nCoV), Situation Report – 12; 2020.
3. Nicola M, O'Neill N, Sohrabi C, Khan M, Agha M, Agha R. Evidence based management guideline for the COVID-19 pandemic. – Review article. *Int J Surg* 2020;77:206-16.
4. World Health Organization. Interim Recommendations on Obligatory Hand Hygiene against Transmission of COVID-19. Interim Recommendation April 01, 2020. Available from: <https://www.who.int/who-documents-detail/interim-recommendations-on-obligatory-hand-hygiene-against-transmission-of-covid-19>. [Last accessed on 2020 Apr 24].
5. Bradley M. The essential guide to the Wuhan virus (symptoms, transmission and prevention). *Corona Virus*; 2020.
6. Vadala R, Princess I. Emerging pandemic COVID-19: Myths and facts. *Int J Sci Rep* 2020;6:283-5.
7. Press Information Bureau, Government of India. PM Calls for Complete Lockdown of Entire Nation for 21 Days;2020. Available from: <http://Pib.gov.in/Pressreleaseshare.aspx?PRID=1608009>. [Last accessed on 2020 Mar 24].
8. Krishnan A, Dasgupta R. Science, policy, people, and public health: What Is COVID-19 teaching us? *Indian J Public Health* 2020;64:S87-9.
9. Long VJ, Liu JC. Behavioral changes during the covid-19 pandemic: Results of a national survey in Singapore. Preprint medRxiv 7, August 2020, DOI: 10.1101/2020.08.06.20169870. Available from: <https://www.medrxiv.org/content/100.1101/2020.08.06.20169870v1.full.pdf>. [Last accessed on 2020 Oct 19]
10. Centers for Disease Control and Prevention, 2019 Novel Coronavirus; 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html>. [Last accessed on 2020 Jun 26].
11. World Health Organization, Novel Coronavirus (2019-nCoV) Advice for the Public; (2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>. [Last accessed on 2020 May 02].
12. WHO. Coronavirus Disease (COVID19) Events as they Happen. Available from: <https://www.who.int/emergencies/diseases/novelcoronavirus2019/eventsastheyhappen>. [Last accessed on 2020 Oct 19]
13. Chu DK, Akl AE, Duda S, Solo K, Yaacoub S, Schünemann HJ. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: A systematic review and meta-analysis. *Lancet* 2020; 395: 1973–87. [Last accessed on 2020 Jun 11].
14. How Long Will Coronavirus Survive on Surfaces? Available from: <https://health.clevelandclinic.org/how-long-will-coronavirus-survive-on-surfaces/>. [Last accessed on 2020 May 26].
15. van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1 Correspondence. *N Engl Med J* 2020;382:16.
16. World Health Organization Coronavirus Disease (COVID-19) Advice for the Public: Myth Busters, WHO; 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>. [Last accessed on 2020 May 02].
17. Masurkar D, Jaiswal P. Myths about COVID-19. *Int J Res Pharm Sci* 2020;1:907-12.
18. Sarla GS. COVID 19: Myths and facts. *Res Rev Manag Emerg Trauma Nurs* 2020;2:5-8.
19. Liu Y, Li T, Deng Y, Liu S, Zhang D, Li H, et al. Stability of SARS-CoV-2 on environmental surfaces and in human excreta. *J Hosp Infect* 2020;107:105-7.
20. Riddell S, Goldie S, Hill A, Eagles D, Drew TW. The effect of temperature on persistence of SARS-CoV-2 on common surfaces. *Virol J* 2020;17:145.
21. Hammett E. How long does Coronavirus survive on different surfaces? *BDJ Team* 2020;7:14-5.
22. Chin AW, Chu JT, Perera MR, Hui KP, Yen HL, Chan MC. Stability of SARS-CoV-2 in different environmental conditions. *Lancet Microbe* 2020;1:e10.
23. World Health Organization. 2019-nCoV Situation Report. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situationreports/>. [Last accessed on 2020 Jun 12].
24. Lahiri A, Jha SS, Bhattacharya S, Ray S, Chakraborty A. Effectiveness of preventive measures against COVID-19: A systematic review of *in silico* modeling studies in Indian context. *Indian J Public Health* 2020;64:S156-67.
25. Pant R, Choudhry LP, Rajesh JG, Yeldandi VV. COVID-19 epidemic dynamics and population projections from early days of case reporting in a 40 million population from Southern India. *MedRxiv* 21 April 2020 doi: <https://doi.org/10.1101/2020.04.17.020070292> Available from: <https://www.medrxiv.org/content/medrxiv/early/2020/04/21/2020.04.17.020070292.full.pdf>. [Last accessed on 2020 Jun 28].
26. Paul A, Chatterjee S, Bairagi N. Prediction on Covid-19 epidemic for different countries: Focusing on South Asia under various precautionary measures. *MedRxiv* 11 April, 2020.- doi: <https://doi.org/10.1101/2020.04.08.20055095>. Available from: <https://www.medrxiv.org/content/medrxiv/early/2020/04/11/2020.04.08.20055095.full.pdf>. [Last accessed on 2020 Jun 28].
27. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, et al. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *N Engl J Med* 2020;382:970-1.
28. Qun Li, M. Med., Xuhua Guan, Peng Wu, Xiaoye Wang, M.P.H., et al. Early transmission dynamics in Wuhan, China, of novel Corona virus – Infected Pneumonia. *N Engl J Med* 2020;382:1199-1207. DOI: 10.1056/NEJMoa2001316. Available from: <https://www.nejm.org/doi/pdf/10.1056/NEJMoa2001316?articleTools=true> OR <https://www.nejm.org/doi/full/10.1056/nejmoa2001316>. [Last accessed on 2020 Jun 25].
29. World Health Organization, Alcohol and COVID-19: What you need to know. Available from: [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0010/437608/Alcohol-and-COVID-19-what-you-need-to-know.pdf?ua=1](https://www.euro.who.int/__data/assets/pdf_file/0010/437608/Alcohol-and-COVID-19-what-you-need-to-know.pdf?ua=1). [Last accessed on 2020 Jun 22].
30. Alcohol Use during the COVID-19 Pandemic. Newsletter, Medical News Today. Medically Reviewed by Meredith Goodwin, MD, FFAFP, written by Aaron Kandola on May 19, 2020. Available from: <https://www.medicalnewstoday.com/articles/alcohol-and-covid-19>. [Last accessed on 2020 Jun 22].
31. Ignore Fake News. There is No Scientific Evidence that Any Food Prevents or Cures COVID – 19, Prevent the Spread of Coronavirus (COVID-19). COVID-19: Posters, Food Safety and Standards Authority of India, June 7, 2020. Available from: [https://fssai.gov.in/upload/uploadfiles/files/COVID\\_19\\_IEC\\_ENG78.jpg](https://fssai.gov.in/upload/uploadfiles/files/COVID_19_IEC_ENG78.jpg). [Last accessed on 2020 Jun 13].
32. Wu Y, Jing W, Liu J, Ma Q, Yuan J, Wang Y, et al. Effects of temperature and humidity on the daily new cases and new deaths of COVID-19 in 166 countries. *Sci Total Environ* 2020;729:139051.
33. 85% Correlation between Temperature Rise & Cut in Virus Spread: Study, NEERI, India. Available from: <https://timesofindia.indiatimes.com/india/85-correlation-between-temperature-rise-cut-in-virus-spread-study/articleshow/75439996.cms>. [Last accessed on 2020 Jun 25].
34. Ujiie M, Tsuzuki S, Ohmagari N. Effect of temperature on the infectivity of COVID-19, *Int J Infect Dis* 2020;95:301-3.
35. Groza A. Detecting fake news for the new coronavirus by reasoning on the Covid-19 ontology. *arXiv* 2020.
36. Philip M, Chandrashekhar C, Mahakalkar C, Kaple NM, Kshirsagar S, Shukla A. Mental and Behavioral Changes during

- Covid 19 Pandemic and how to deal with it. J Crit Rev2020;7;8.
37. Chen ZM, Fu JF, Shu Q, Chen YH, Hua CZ, Li FB, *et al.* Diagnosis and treatment recommendations for pediatric respiratory infection caused by the 2019 novel coronavirus. World J Pediatr 2020;16:240-6.
  38. News Letter, Live Science. March 18; 2020. Available from: <https://www.livescience.com/how-long-coronavirus-last-surfaces.html>. [Last accessed on 2020 Jun 26].
  39. Balkhi F, Nasir A, Zehra A, Riaz R. Psychological and behavioral response to the coronavirus (COVID-19) pandemic. Cureus 2020;12:e7923.
  40. Liu X, Luo WT, Li Y, Li CN, Hong ZS, Chen HL. Psychological status and behavior changes of the public during the COVID-19 epidemic in China. Infect Dis Poverty 2020;9:58.
  41. Akdeniz G, Kavakci M, Gozugok M, Yalcinkaya S, Kucukay A, Sahutogullari B. A survey of attitudes, anxiety status, and protective behaviors of the university students during the COVID-19 outbreak in Turkey. Front Psychiatry 2020;11:695.
  42. Eat Right during COVID-19, Food Hygiene, Safety and Nutrition Guidelines for Consumers to Prevent the Spread of COVID-19. Eat Right India, Food Safety and Standards Authority of India, June 7, 2020. Available from: [https://fssai.gov.in/upload/uploadfiles/files/Guidance\\_Document\\_Eat\\_Right\\_07\\_06\\_2020.pdf](https://fssai.gov.in/upload/uploadfiles/files/Guidance_Document_Eat_Right_07_06_2020.pdf). [Last accessed on 2020 Jun 13].
  43. COVID-19: POSTERS, Food Safety and Standards Authority of India, June 7, 2020. Available from: [https://fssai.gov.in/upload/uploadfiles/files/COVID\\_19\\_IEC\\_ENG80.jpg](https://fssai.gov.in/upload/uploadfiles/files/COVID_19_IEC_ENG80.jpg). [Last accessed on 2020 Jun 13].
  44. Sohrabia C, Alsafib Z, Neilla N, Khanb M, Kerwanc A, Al-Jabirc A, *et al.* World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). Int J Surg 2020;76:71-6.
  45. World Health Organization. Coronavirus Tips: Can COVID-19 Spread Through Coins And Bank Notes? WHO Tells. Available from: <https://doctor.ndtv.com/living-healthy/coronavirus-tips-can-covid-19-spread-through-coins-and-bank-notes-who-tells-2216805>. [Last accessed on 2020 Jun 13].