Knowledge, Attitude, and Practice Toward Mask-Wearing Behaviors During Covid-19 Pandemic Among Mangalore Residents: A Cross-Sectional Study

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Abstract

Objectives   The objective of this study is to assess the knowledge, awareness, and practice toward mask-wearing behaviors of Mangalore residents during the coronavirus disease 2019 (COVID-19) outbreak.

Materials and Methods   This survey was conducted at A B Shetty Memorial Institute of Dental Sciences in Mangalore. The questionnaire consisted of 18 questions that were prepared as an online form (Google Forms), and a total of 172 responses were received among the residents of Mangalore who visited the hospital.

The questions were distributed based on knowledge, attitude, and practice regarding the mask-wearing behaviors, and the distribution of responses was presented as frequency and percentages. Prior to the inception of the study, the nature and purpose of the study were explained to each respondent, and informed consent was obtained by all participants in this study.

Statistical analysis was done using SPSS software version 23.

Results   It was evident that the COVID-19 knowledge scores were found to be significantly associated with a lower likelihood of negative attitudes and potentially dangerous practices toward the COVID-19 epidemic in this study. These findings clearly indicate the importance of improving residents' COVID-19 knowledge via health education, which may also result in improvements in their attitudes and practices toward COVID-19.

Conclusion   In summary, our findings suggest that Mangalore residents have fair knowledge and optimistic attitudes, despite the current lockdown measures undertaken during the second wave of COVID-19, The positivity rate in Mangalore has not reduced satisfactorily. Self-protection, testing, and vaccination would help to reduce the spread and mortality rate due to coronavirus. The residents of Mangalore should abide by the COVID -19 preventive measures and implement this knowledge into their daily practices.

Keywords
► attitude
► COVID-19
► knowledge
► Mangalore residents

Introduction

Coronavirus disease, 2019 (COVID-19) or severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the newly discovered emerging respiratory disease that is caused by a new member of the coronavirus family called novel coronavirus.[1] The epidemic has become one of the major public health problems of this century that started in December 2019 in Wuhan city of China.[2] The novel coronavirus that causes COVID-19 continues to spread in India. After an initial outburst of confirmed or probable cases of COVID-19 in late March 2020, the number of new cases quickly picked up again in early April 2021, indicating a second wave in the country followed by speculations of a possible third wave in the country if the current scenario was not managed properly.

Risk from the viral transmission is reduced by 55% through frequent hand-washing as evidenced by various researchers.[3,4] Masks play a pivotal role in the prevention of the spread of respiratory infectious disease epidemics as they can purify the air entering the lungs through filtration.[5] Hand-washing and mask-wearing were proved to be effective in blocking viral spread during the outbreak of SARS.

A variety of evidence suggests that masks can help reduce the transmission of the novel coronavirus; at the time of this writing, the Centers for Disease Control and Prevention recommended the usage of masks or face coverings in public settings and when around people who do not live in one's household, especially when other social distancing measures are difficult to maintain.[6] It has been implemented in the COVID-19 pandemic era that everyone in public areas wears masks not to transfer their germ to others. Long-term implementation of such a policy might be difficult without the threat of a looming pandemic. Although proper assessment on the feasibility of this policy has not been made, it appears to settle in as the "new normal" these days.[7]

The objective of the study was to assess the knowledge, awareness, and practice of mask-wearing behaviors of Mangalore residents during the COVID-19 outbreak.

Materials and Methods

This survey was conducted at A B Shetty Memorial Institute of Dental Sciences in Mangalore. The survey was prepared in the form of an online form (Google Form), and a total of 172 responses were received among the residents of Mangalore who visited the hospital from March 1 to 31, 2021.

The self-administered questionnaire consisting of 18 questions was initially validated and distributed based on knowledge, attitude, and practice regarding the mask-wearing behaviors, and the distribution of responses was presented as frequency and percentages. Before the inception of the study, the nature and purpose of the study were explained to each respondent, and informed consent was obtained by all participants in this study.

The following questions were asked.

1. The virus causing COVID-19 infection is called:
   a. Severe acute respiratory syndrome coronavirus (SARS-CoV-2)
   b. Coronavirus
   c. Human immuno-deficiency virus
   d. I don't know

2. The First Reports of Cases were from Wuhan City in Hubei Province of China
   a. True
   b. False
   c. I don't know

3. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, headache, diarrhea, and body pain
   a. All the above symptoms are mentioned
   b. None of the above symptoms mentioned
   c. I don't know

4. Which type of face mask do you wear?
   a. Cloth Mask
   b. Single ply
   c. Three-ply mask (surgical mask)
   d. KN95
   e. N95 respirator
   f. Any other

5. Which one of the following has the highest filtration rate?
   a. Cloth mask
   b. Single ply mask
   c. 3 Ply mask (surgical mask)
   d. KN95
   e. N95 respirator
   f. I don't know

6. Which layer acts as a filter media barrier in surgical mask?
   a. First layer
   b. Middle layer
   c. Last/Third layer
   d. I don't know

7. For proper wearing, to which extent the mask should cover?
   a. Nose only
   b. Nose and mouth
   c. Nose, mouth, and chin
   d. I don't know

8. How long can you wear a surgical mask?
   a. 8 hours
   b. 4 hours
   c. 2 hours
   d. I don't know

9. Is a cloth mask as effective as a surgical mask?
   a. True
   b. False
   c. I don't know

10. Do you wear a mask in public places to protect yourself against COVID-19?
    a. Yes
    b. No
    c. I don't know

11. Do you wear a mask on hospital premises to protect yourself against COVID-19?
    a. Yes
    b. No
    c. I don't know

12. If so, in what color-coded bins do you dispose of the mask?
    a. Yellow bin
    b. Red bin
    c. Black Bin
    d. I don't know

13. How do you dispose of /re-use the mask normally?
    a. Dustbin
    b. Roadside
    c. I re-use my mask
    d. Any other means
    e. I don't know

14. If re-used, how often do you change your mask?
    a. Change daily
    b. Change once in 2 days
    c. Re-use after washing the mask
    d. Any other method.

15. In recent days, have you gone to any crowded place?
    a. Yes
    b. No
    c. Sometimes

16. Do you agree that wearing a face mask helps in preventing the spread of Covid-19?
    a. Agree
    b. Disagree
    c. I don't know

17. Does wearing a mask make you feel uncomfortable?
    a. Yes
    b. No
    c. I don't know

18. Do you agree that COVID-19 will finally be successfully controlled?
    a. Agree
    b. Disagree
    c. I don't know

Results

Knowledge score:

Each positive response was awarded a score of '1' and negative response as '0'.

The total score of the subject was calculated by adding the sum of responses which ranged from 1 to 15, on a Likert Scale.

The knowledge score so obtained was categorized as high (>6), medium (4–6), and low (1–3)

The mean knowledge score was found to be 4.38 ± 0.09 (►**Figs. 1, 2** and ►**Table 1**).

Discussion

COVID-19's pandemic has thrown the entire world into a state of emergency, with thousands of people dying every day as a result of this life-threatening sickness. Face masks are used as a barrier to limit the danger of microorganism transmission between humans.[1,8] However, to provide effective protection, the people must have an intimate knowledge of wearing and disposing of the same.[9]

The vast majority of the participants held an optimistic attitude toward the COVID-19 epidemic: 96.5% believed that COVID-19 will finally be successfully controlled and 96.5% and 97.7% had confidence that wearing a face mask would prevent them from getting infected when they went to public gatherings and in hospital premises.

Despite this, the practices of Mangalore residents showed that nearly (13.4%) avoided crowded places, whereas (77.9%) wore masks when leaving the home and still went to crowded places during the period of the COVID-19 second-wave outbreak. In this study, 62.8% of participants obtained an overall score regarding the correct usage of a surgical face mask and knew the correct maximum duration of using it also. Cloth mask, re-use of a surgical mask, and its extended use are commonly seen during the extended outbreak of the COVID-19 pandemic. In this study, around 48.8% agreed that a cloth mask is not as effective as a regular surgical mask and approximately 96.5% knew that the extent of the face mask should cover the nose, mouth, and chin. Studies also highlighted similar findings concluding that cloth mask, re-use, and extended use of mask makes it ineffective but, in our study, we found that 25.6% were reusing the mask after washing and 41.9% of the people were found to be changing daily. When asked about the disposal of the face masks, 59.9% of people would throw in the dustbin compared with 32% who insisted on re-using the mask. As the WHO established a color-coded bin system for proper disposal of biomedical waste in hospitals and when it was asked from our participants, 64% of the people knew that the face mask is to be disposed of in the yellow-coded bag.

Also, in our study, it was seen that a majority (89%) of the residents were feeling uncomfortable on the prolonged wearing of a mask.

COVID-19 knowledge levels were found to be significantly correlated with a lower likelihood of pessimism and possibly dangerous COVID-19 practices in studies. The findings clearly demonstrate the necessity of enhancing residents' COVID-19 knowledge through health education, which would lead to changes in their attitudes and practices about COVID-19.[9,10]

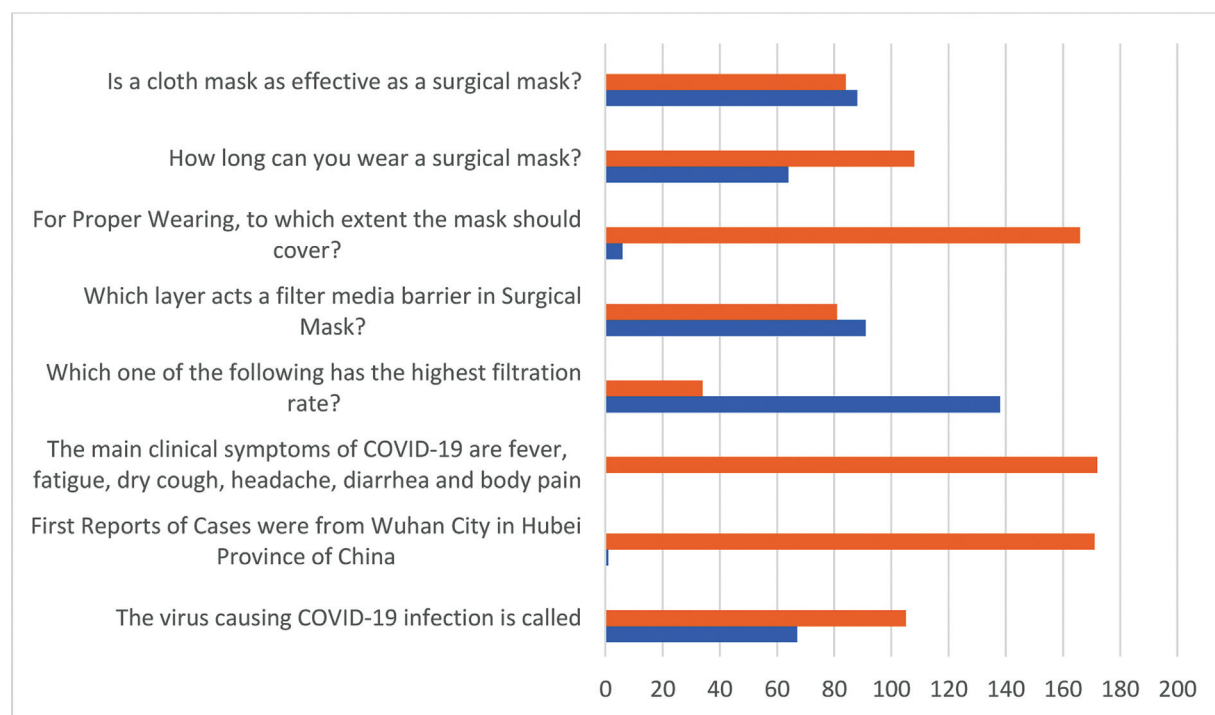The management of COVID-19 has been largely supportive that includes infection prevention and control measures

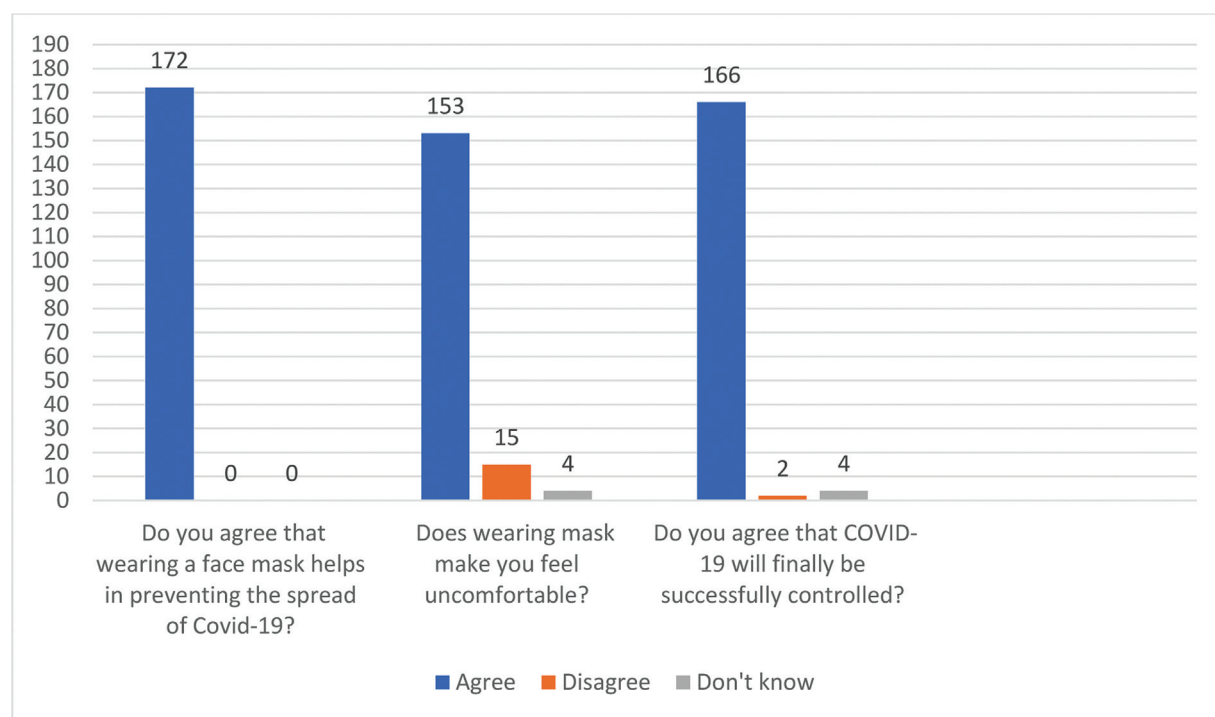**Fig. 1** The frequency of responses to the knowledge-based questions.

Fig. 2 The frequency of responses to the attitude-based questions.

to lower the risk of transmission and isolation, and the COVID-19 knowledge may be greatly increased if the health education programs are specifically designed for the vulnerable population.[11]

Due to limited access to the internet and online health information resources, vulnerable segments of Indian society, such as older persons and rural people at the grass-roots

level, are more likely to have poor knowledge, negative attitudes, and ineffective COVID-19 prevention activities.[10] Therefore, knowledge, attitudes, and practices toward COVID-19 of vulnerable populations deserve special research attention in today's India. The non-standardized and limited assessment of attitudes and practices regarding COVID, which should be created as multi-dimensional measures

Table 1 The practice-based questions were interpreted based on the valid percentage of the sample size

P1—Which type of face mask do you wear?		
Responses	Frequency	Percent
Cloth mask	40	23.3
Single ply	1	0.6
Three ply	59	34.3
KN95	53	30.8
N95 respirator	19	11.0
P2—Do you wear a mask in public places to protect yourself against COVID-19?		
Yes	166	96.5
Don't know	6	3.5
P3—Do you wear a mask on Hospital Premises to protect yourself against COVID-19?		
Yes	168	97.7
Don't know	4	2.3
P4—If so, in what color-coded bins do you dispose of the mask?		
Yellow bin	110	64.0
Red bin	6	3.5
Black bin	1	0.6
Don't know	55	32.0
P5—How do you dispose of /Re-use the mask normally?		
Dust bin	103	59.9
Reuse	55	32.0
Any other means	8	4.7
Don't know	6	3.5
P6—If re-used, how often do you change your mask?		
Change daily	72	41.9
Change once in 2 days	34	19.8
Wash and reuse	44	25.6
Any other method	22	12.8
P7—In recent days, have you gone to any crowded place?		
Yes	134	77.9
No	23	13.4
Sometimes	15	8.7

via group discussion and in-depth interviews, is a limitation of this study, in addition to the small sample size. Due to the time constraints, both were assessed using only three straightforward questions.

Despite the current lockdown measures undertaken during the second wave of COVID-19, The positivity rate in Mangalore has not reduced satisfactorily. Self-protection, testing, and vaccination would help to reduce the spread and mortality rate due to coronavirus. The residents of Mangalore should abide by the COVID -19 preventive measures and implement this knowledge into their daily practices.

Conclusion

In summary, our findings suggest that Mangalore residents have fair knowledge, optimistic attitudes, and favorable practices toward COVID-19 during the rapid second wave period of the outbreak, yet there is a significant knowledge gap that indicates the importance of good COVID-19 knowledge suggesting that health education programs aimed at improving COVID-19 knowledge helps to encourage and maintain safe practices. We hope that the battle against COVID-19 will be conquered with the joint efforts of the central and state government authorities, frontline workers, and residents and be equipped for the future.

Conflict of Interest
None declared.

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