IOSR Journal Of Pharmacy
(e)-ISSN: 2250-3013, (p)-ISSN: 2319-4219
Volume 11, Issue 11 Series. I (November 2021), PP. 38-45
www.iosrphr.org

IOSRPHR

Original Research Article

A study on the Knowledge, Attitude, and Practice of mask use as mandated due to COVID-19 pandemic

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Received 15 November 2021; Accepted 28 November 2021

ABSTRACT
Background: The virus causing COVID -19 disease is termed as severe acute respiratory syndrome corona virus 2 (SARS-CoV-2).Primary route of transmission of COVID-19 is via small respiratory droplets, and mask use by public offers a tremendous help in reducing disease spread from pre-symptomatic and asymptomatic individuals. It has been thought as the most effective at stopping spread of the virus when compliance is high.
Materials & Methods: This study has been planned to find out the level of knowledge, attitude and practice (KAP) of mask use among two groups comprising of healthcare providers and patient parties respectively at Deben Mahata Government Medical College and Hospital. It was a cross sectional KAP Questionnaire survey among 100 participants. A pre-designed, validated, structured Questionnaire was used. Data were analyzed using appropriate statistical tests.
Results: We analyzed the data of 100 study participants. Group A which included healthcare staffs contained 40 participants while group B included indoor patient parties had 60 participants. Overall mask use pattern revealed N95 masks (69%), surgical masks (24%), cloth masks (16%), handkerchiefs (4%). Most common sources of learning about mask use among all participants were newspapers (48%), training at hospital (38%), television (22%).Overall correct responses to knowledge, attitude and practice related questions were 91.5%, 79.8%, 96.4% respectively. Group A had significantly more correct responses for knowledge (p=<0.001) and attitude (p=0.031) than group B, though there were no significant differences for practice related questions (p=0.406). In total, 28% respondents felt uneasiness while using masks, mostly from group B. 98% of total participants practice hand washing along with mask use, maintain social distance, sanitize other objects regularly and there was no significant difference between the groups.
Conclusion: The results suggest increased awareness regarding mask use among both health care staffs and patient parties but there are further scope for improvement.
KEY WORDS: COVID-19; Mask; Questionnaire; Knowledge; Attitude; Practice.

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I. INTRODUCTION

India braces for the COVID-19 pandemic; healthcare workers on the frontlines are particularly vulnerable to this infection. The virus that causes COVID -19 was initially called as 2019-nCoV and was then termed as severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Viruses (ICTV)[1]. It is a new strain discovered in 2019 which was not found previously in humans. The science around the use of masks by the general public to impede COVID-19 transmission is advancing rapidly. A primary route of transmission of COVID-19 is likely via small respiratory droplets, and is known to be transmissible from pre-symptomatic and asymptomatic individuals. Reducing disease spread requires two things: first, limit contacts of infected individuals via physical distancing and contact tracing with appropriate quarantine, and second, reduce the transmission probability per contact by wearing masks in public, among other measures. The preponderance of evidence indicates that mask wearing reduces the transmissibility per contact by reducing transmission of infected droplets in both laboratory and clinical contexts. Public mask wearing is most effective at stopping spread of the virus when compliance is high.[2] The decreased

transmissibility could substantially reduce the death toll and economic impact while the cost of the intervention is low. Mask use in the pre-COVID-19 era was absolutely unnecessary excepting those due to environmental pollution in the developing as well as developed countries around the world. The mode of covering face with the help of mask is being mandatory as propagated by the governing bodies of different countries around the world since the outbreak of corona virus. This study has been planned to find out the level of knowledge regarding use of face masks, general attitude towards the necessity of its use while in public places, and the real scenario of practicing the mask use among the healthcare staffs on one side and patient parties on the other side.

Today, more than 50 countries mandate wearing masks in public. Many citizens in countries without strict regulations wear them anyway to protect themselves and others from catching corona virus.[3] Many citizens in countries without strict regulations wear them anyway to protect themselves and others from catching corona virus. In countries newer to the practice, some people are struggling with having something covering our faces. "It's hard to breathe with a mask on" and "I can't have a proper conversation because my words sound muffled" are two common complaints. The knowledge about emerging infectious diseases was poor and there is need for further education and training programs particularly in the use of personal protective equipment, isolation and infection control measures.[4] The self-reported infection control practices were sub-optimal and seem to be overestimated. There is a strong need to implement periodic educational interventions and training programs on infection control practices for COVID-19 across all healthcare professions.[5]

To assess the improvement of mask using practices and compliance across different parts of the country, there is a strong need to perform regular knowledge, practice and attitude (KAP) based studies which is lacking from Eastern India. Among the health care staffs, doctors are usually well informed, well educated about several aspects of COVID-19 and mask use due to seminars, continuous medical education(CME)'s, research papers, journals, apart from their medical knowledge and skills which has helped immensely to improve their awareness about mask use but apart from doctors, we also need to assess the awareness level regarding mask use among rest of the health care staffs including nursing staffs, paramedical staffs, Group D Staffs, and other ancillary staffs where the sources of learning are limited. Also, alongside medical staffs, we need to know the awareness level among general public regarding use of mask, an important pillar in prevention of COVID-19 in the society which can be assessed by surveying the parties in a hospital. So, we conducted a questionnaire based survey in a peripheral medical college of West Bengal with the following objectives, a) to analyze the knowledge, attitude and practice regarding mask use among health care staffs excluding doctors, and b) to analyze the knowledge, attitude and practice regarding mask use among patient parties.

II. MATERIALS AND METHODS

It was a a questionnaire based cross sectional survey to analyze the knowledge, attitude and practice regarding mask use among health care staffs and patient parties done at administrative block and indoor patient departments (IPD's) of Gynaecology and Obstetrics (G&O) and Anaesthesia of Deben Mahata Government Medical College and hospital.

Study Design: A questionnaire based cross sectional survey.
Study Location: Administrative block and Indoor Patient departments (IPD's) of Gynaecology and Obstetrics (G&O) and Anaesthesia of Deben Mahata Government Medical College and Hospital (DMGMCH), Purulia,West Bengal, India.
Study Duration: 4 months from October 2020 to January 2020.
Sample size: A total of 100 subjects were enrolled in our study.
Methodology: A questionnaire based cross sectional survey encompassing two groups.
Group A: Nursing staffs, Paramedical staffs, Group D Staffs, and other ancillary staffs providing healthcare in the medical college hospital.
Group B: Patient parties of the indoor patient departments of Gynaecology and Obstetrics (G&O) and Anaesthesia.
A pre-designed, validated, structured Questionnaire was used for conducting the survey regarding knowledge, attitude, and practice (KAP) regarding mask use. The questionnaire has been adapted from the current interim guidance and information for healthcare workers published by ICMR, WHO, MOHFW, India.[6,7,8] We conducted the awareness survey with the study components by using the self-administered questionnaire as developed by us after obtaining informed consent from the study participants. It consisted of 19 questions, out of which 2 questions were informative related to sources of learning about mask use and types of mask use and rest 17 questions were used to compare knowledge, attitude and practice among our study groups (4 questions for knowledge, 6 for attitude and 7 for practice). Consenting Study subjects underwent a structured interview at a point of time to evaluate their existing knowledge about the use of face masks in the present era of corona virus. They were asked about their attitude towards the utility of mask use due to the emergence of such a

medical emergency. Our study population were also enquired regarding the practice of mask use on day-today-basis while being exposed to the threat of corona virus in their workplaces and while getting out of their homes in the community for the purpose of various works. Analysis was done to describe the demographic parameters, knowledge, attitude and practice related responses among study subjects.

Inclusion criteria:

1. Nursing staffs, Paramedical staffs, Group D Staffs, and other ancillary staffs .
2. Patient parties of the indoor patient departments of G&O , Anaesthesia.
3. Aged between 18-65 years.
4. Either sex.

Exclusion criteria:

1. Age <18 years.
2. Persons with mental disorders.
3. Pregnant women.
4. Not willing to participate.

Statistical analysis

Data was analyzed using SPSS version 21. Descriptive statistics, Chi-square test, Fisher's exact test were used to analyze the data. P value <0.05 was considered as cut off value of significance.

Ethical Considerations

The study commenced after the IEC approval was obtained. Informed Consent was taken from all the study participants.

III. RESULTS

We analyzed the data of 100 study participants. Mean age was 34.36±11.05. Most common age group was 20-29 years (46%). Males (56%) were more than females (44%). More people belonged to rural areas (58%). Demographic details given in [Table 1].

Table 1: Demographic pattern of study participants:

Parameters	Categories	n(%)
Age(years)	Mean ± SD	34.36±11.05
	20-29	**46(46)**
	30-39	33(33)
	40-49	9(9)
	50-59	10(10)
	Above 60	2(2)
Gender	Male	**56(56)**
	Female	44(44)
Residence	Urban	42(42)
	Rural	**58(58)**

Group A which included Nursing staffs, Paramedical staffs, Group D Staffs, and other ancillary staffs providing healthcare in the medical college hospital contained 40 participants while group B included Patient parties of the indoor patient departments of G&O and Anaesthesia, had 60 participants. Overall mask use pattern revealed N95 masks (69%), surgical masks (24%), cloth masks (16%), handkerchiefs (4%). When we performed intergroup analysis for each types of mask used, we found N95 masks and cloth masks were significantly more used in group B with respective p values of 0.042 and <0.001 in group B, while surgical masks were significantly more used in group A (p value <0.001). Cloth masks and handkerchiefs were not used in group A comprising of heath care staffs. Pattern of mask use given in Table 2 and Chart 1

Table 2: Pattern of mask use in both groups

Type of mask	Overall (N=100) n(%)	Group A (N=40) n(%)	Group B(N=60) n(%)	P value
N95 Mask	69(69)	23(57.5)	46(76.7)	**0.042**
Surgical Mask	24(24)	17(42.5)	7(11.7)	**<0.001**
Cloth Mask	16(16)	0(0)	16(26.7)	**<0.001**
Handkerchief	4(4)	0(0)	4(6.7)	0.296*

*P values obtained by Chi-square test, *Fisher's exact test used, p value <0.05 was taken as significant*

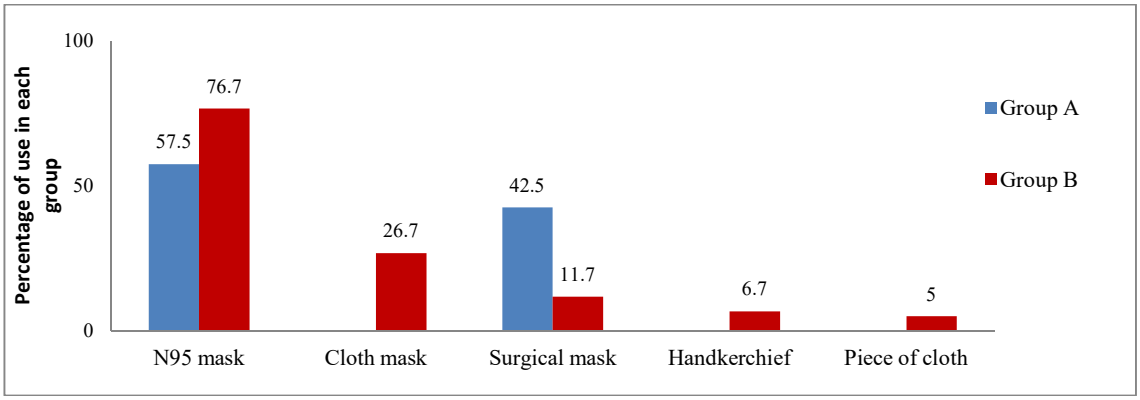

Chart 1 : Preferred types of masks for daily activities (in both groups)

Most common sources of learning about mask use among all participants were newspapers (48%), training at hospital (38%), television (22%), phone calls/messages (4%), community leaders (4%). Among two groups, primary sources of information in group A which included health care staffs was training at hospital (95%) and in group B which included patient parties were newspapers (80%).[Chart 2]

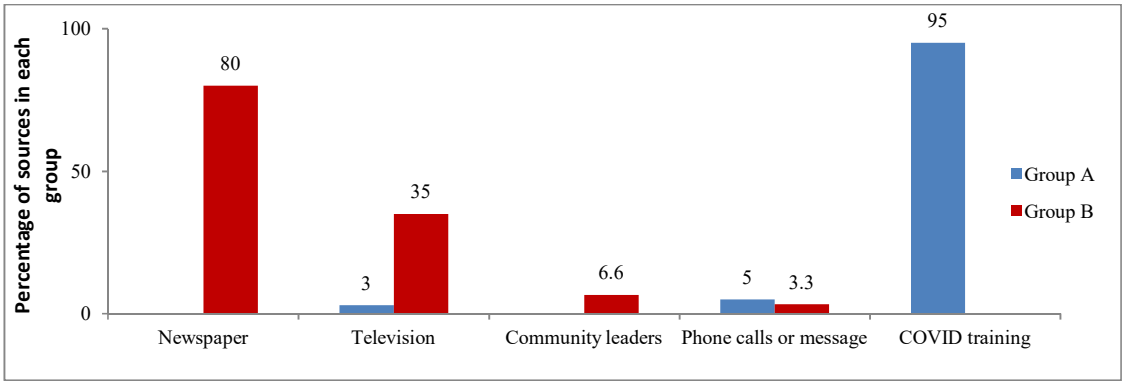

Chart 2: From where have you learnt to use a mask (in both groups)

Overall correct responses to knowledge, attitude and practice related questions were 91.5%, 79.8%, 96.4% respectively. Group A had significantly more correct responses for knowledge (p=<0.001) and attitude (p=0.031) than group B, though there were no significant differences for practice related questions (p=0.406).[Table 3]

Table 3: Overall knowledge, attitude and practice response and comparison between the groups :

KAP Questions		Overall	Group A	Group B	P value
Knowledge related	**Correct**	366(91.5)	160(100)	206(85.8)	**<0.001**
	Incorrect	34(8.5)	0(0)	34(14.2)	
Attitude related	**Correct**	479(79.8)	202(84.2)	277(76.9)	**0.031**
	Incorrect	121(20.2)	38(15.8)	83(13.1)	
Practice related	**Correct**	675(96.4)	272(97.1)	403(95.6)	0.406
	Incorrect	25(3.6)	8(2.9)	17(4.4)	

P values obtained by Chi-square test, p value <0.05 was taken as significant.

Almost all study participants responded that they use face mask in public places. Every participant in group A and 79% in group B read previously about mask use which was significantly different (p=<0.001). We found 87.5% and 43.5% people thought that mask use can have an overall psychosocial impact in group A and

B respectively (p=<0.001). All health care staffs (group A) answered that they give advise in their family and neighbourhood regarding appropriate use of mask, thought that masks use proper disposal after use and opined to continue use of mask if current pandemic situation prevails, whereas among patient parties (group B), the responses were 88%, 83.33% and 61.67% respectively with p value being significantly different between the groups for all 3 questions. Overall 28% respondents felt uneasiness while using masks, majority of them were from group B (p vale between groups <0.001). As per our findings, 98% of total participants practice hand washing along with mask use, maintain social distance, sanitize other objects regularly and there was no significant difference between the groups. Comparison of responses to KAP questions are given in Table 4.

Table 4: Comparison of responses to study questionnaire between the groups :

Questions	Response	Overall n(%)	Group A n(%)	Group B n(%)	P value
Do you use a mask while you are in public places?(P)	Yes	99(99)	40(100)	59(98)	1.000*
	No	1(1)	0(0)	1(2)	
Have you read previously about the use of mask?(K)	Yes	79(79)	40(100)	39(65)	**<0.001**
	No	21(21)	0(0)	21(35)	
Do you know that mask use is mandatory now-a-days?(K)	Yes	99(99)	40(100)	59(98)	1.000*
	No	1(1)	0(0)	1(2)	
Do you think, use of mask can prevent a highly infectious disease like COVID-19?(K)	Yes	98(98)	40(100)	58(97)	0.515*
	No	2(2)	0(0)	2(3)	
Can mask use have an overall psychosocial impact on the individual?(A)	Yes	61(61)	35(87.5)	26(43)	**<0.001**
	No	39(39)	5(12.5)	34(57)	
Do every member of your family have individual mask of their own?(A)	Yes	99(99)	40(100)	59(98)	1.000*
	No	1(1)	0(0)	1(2)	
Do you wash or sanitize your hands each time if you touch outer surface of your mask?(P)	Yes	84(84)	32(80)	52(86.7)	0.373
	No	16(16)	8(20)	8(13.3)	
Do you advise in your family and neighbourhood regarding appropriate use of mask?(A)	Yes	93(93)	40(100)	53(88)	**0.040**
	No	7(7)	0(0)	7(12)	
Do you feel any uneasiness while using masks?(A)	Yes	28(28)	3(7.5)	25(42)	**<0.001**
	No	72(72)	37(92.5)	35(58)	
Can you wear a mask daylong when you need to stay outside for purpose of work?(P)	Yes	99(99)	40(100)	59(98)	1.000*
	No	1(1)	0(0)	1(2)	
Do you practice hand washing along with the use of mask?(P)	Yes	98(98)	40(100)	58(97)	0.515*
	No	2(2)	0(0)	2(3)	
Do you maintain social distance while wearing a mask?(P)	Yes	98(98)	40(100)	58(97)	0.515*
	No	2(2)	0(0)	2(3)	
Do you sanitize other object regularly while using mask on daily basis?(P)	Yes	98(98)	40(100)	58(97)	0.515*
	No	2(2)	0(0)	2(3)	
Do you recommend elderly people to wear mask?(A)	Yes	99(99)	40(100)	59(98)	1.000*
	No	1(1)	0(0)	1(2)	
Do you think that masks require proper disposal?(K)	Yes	90(90)	40(100)	50(83.33)	**0.005***
	No	10(10)	0(0)	10(16.67)	
What will you do while stepping outside when you don't have a proper mask within your reach?(P)	Go out without a mask	1(1)	0(0)	1(2)	1.00*
	Use a cloth piece of to cover face	99(99)	40(100)	59(98)	
Do you agree to continue using mask if current situation prevails?(A)	Yes	77(77)	40(100)	37(61.67)	**<0.001**
	No	23(23)	0(0)	23(38.33)	

*P values obtained by Chi-square test, *Fisher's exact test used, p value <0.05 was taken as significant. (K),(A),(P) signify knowledge, attitude & practice related questions respectively.*

IV. DISCUSSION

Evidences suggest that using face mask is one of the most effective way in reducing COVID-19 transmission and government regulations have been made for mandatory mask use to achieve high compliance regarding mask wearing practices. We conducted a cross sectional study to understand the knowledge, attitude and practices among patient parties and health care staffs regarding mask use. Mean age of participants was

34.4±11.1 matches with Azlan et al. (34±11.2) and Pramana et al. (30±11.3).[9,10]We had 42% urban population similar to 46% in Duong et al.[11]Studies suggest that N95 masks and surgical masks are best types of masks in prevention of spread of COVID-19 viruses. Regarding types of masks preferred in our study participants, N95 masks, surgical masks, cloth masks, handkerchiefs were used by 69%, 24%, 16%, 4% respectively where Duong et a reported 1.8%, 57.6%, 40.3%, 0% and Mitra et al. 23.4%, 46.3%, 40%, 11.9% respectively.[11,12]Unexpectedly we found N95 mask use was significantly more in group B but this was may be because, with the increasing demand of N95 masks, many local shops recently started to sell cheap quality lookalike masks at very low price which could be wrongly perceived as N95 masks by the general due to low level of literacy in remote district of Purulia. That may have also influenced the total percentage of N95 use which is quite high than other studies. Health care staffs only used N95 masks and surgical masks, both of which are quite effective in reducing disease transmission. Although the frequency was lesser than Mitra et al., still some people in group B, used cloth masks and handkerchiefs to cover face, may be because they thought it was washable and could be used repeatedly which is a concern, because cloth masks are much less effective than N95 masks and surgical masks. From the onset of the pandemic every country have tried to improve awareness about mask use among general public through television, newspapers, radios, mobile apps, messages, phone calls and special trainings has been given to health care providers. In our survey, most common sources of learning about mask use in group A, was COVID training at hospital as different sensitization and training programmes about COVID-19 and mask use has been arranged in hospitals by health department from the initiation of the pandemic and in group B, it was newspapers as the one of most popular media for information among masses. Feldman et al. and Minyiwab et al. it reported the most common source of learning about mask use was television/radio.[13,14]

For knowledge related questions, we found 91.5% correct answers overall which is close to Duong et al.(89.7%) reported in university students mostly from health related facilities.[11] In group B among patient parties, 85.8% responses were correct which is little better than Azlan et al. done in general community (80.5%) shows improvement in knowledge due to several sources of learning about COVID-19 and mask use.[10] Correct attitude about mask use was seen in 84.2% participants in group A similar to Feldman et al. (84%) done among health care workers and in 76.9% participants in group B which is little better than some studies done in general public (72.8%, 68.3%).[11,13,14]So, similar to previous studies, health care staffs or persons related to medical field had better knowledge and attitude regarding mask use but it is improving in the society as a whole, as well due to continuous spread of information from electronic and printed media, instructions via phone calls. It was nice to find overall 96.4% responses about practice of mask use were correct in our study which is much better than Olum et al.(74%), Duong et al. (76.5) in spite of both were done among participants belonging to medical field.[11,15]Government making mask use mandatory in public places and strict enforcement of laws most probably ensured much better mask use practices in our set up. For the same reason, we think almost everyone (99%) in our study answered that they wore mask in public places in both groups which is way better than other studies (91.3%,71.5%,66.7%,85.2%).[12,14,16,17]In our study, 98% participants agreed to that mask use can prevent COVID-19 spread which is similar to Pramana et al.(99.4%) and Alam et al.(94%).[9,18] As per responses, 98% of our participants practice hand washing along with mask use, maintain social distance, sanitize other objects regularly and there was no significant difference between our study groups. Similar studies among general public also report >90% people practice hand washing along with the use of mask which matches with our study.[9,12,18] Mahato et al. and we found about 98% of total participants responded that they also maintain social distance while wearing a mask, whereas few studies reported lesser percentages of 87.1% (Azlan), 83.4% (Alam).[10,17,18] This was may be because, the later studies were done in general community whereas we had health care staffs in group A and Mahato et al. was done among health care workers. Among patient parties, 83.3% participants felt masks require proper disposal after use which was close to Pramana et al.(85.8%) but lesser than Alam et al.(93.2%) both of which were conducted in general public.[9,18]Overall 28% respondents felt uneasiness while using masks though group B which had patient parties differed significantly from group A but was similar to a survey done by Vereen et al. (40%) among general public.[19] Health care staffs have been using masks for different purposes in hospitals for long before this pandemic, so it is expected that they would find mask use much easier than general public which our results suggest too.

Among the two groups in our study, Group A comprised of health care providers, had significantly more correct responses for knowledge and attitude than groups B comprised of patient parties, though there were no significant differences for practice related questions. Health care staffs are familiar with mask use long before this pandemic begun and also were trained specifically for tackling COVID-19 as a part of high-risk groups which probably had immense influence on their knowledge and attitude. Stringent enforcement of laws regarding mandatory mask use and various government initiatives like mobile apps, pre recorded phone calls, messages helped to improve mask use behaviour among general public along with health care staffs. We found 87.5% and 43.5% people thought that mask use can have an overall psychosocial impact in group A and B respectively ($p=<0.001$). Possibly in group B, patient parties were unable to understand the motive of the question though questionnaires were provided as per their preferred language. All health care staffs (group A)

answered that they had read previously about mask use, give advise in their family and neighbourhood regarding appropriate use of mask, thought that masks use proper disposal after use and opined to continue use of mask if current pandemic situation prevails, whereas among patient parties (group B), the responses were 65%, 88%, 83.33% and 61.67% respectively being significantly different between the groups for all four questions. Though the findings in patient parties group was also encouraging but health care staffs, as having medical knowledge were more competent and more concerned to inform others and improve the knowledge among all to end the pandemic in which continuous mask use practices play a significant role till the current situation prevails. They also had better knowledge of infective material disposal which is a part of the learning for most of them. As per our findings, 98% of total participants practice hand washing along with mask use, maintain social distance, sanitize other objects regularly and there was no significant difference between the groups suggests fair mask use practice in both groups.

V. CONCLUSION

The results suggest improved awareness regarding mask use to prevent spread of COVID-19 among both health care staffs and patient parties. Most of the study participants were aware of additional measures like proper hand washing, maintaining social distance and sanitizing other objects regularly in both the groups with no significant difference. Mask use practices were found excellent among both the groups with no significant difference. Though knowledge and attitude among health care staffs (group A) was significantly better than among patient parties (group B) which may be due to COVID-19 specific training and pre-existing medical knowledge in the former group. So, in spite of increasing compliance regarding mandatory mask use, we still feel there is scope for improvement in knowledge, attitude about mask use in general community.

ACKNOWLEDGEMENTS

Authors would like to extend deep gratitude to health care staffs and patient parties for helping by giving information and participate in this study willingly.
Funding: No funding sources
Conflict of interest: None
Ethical approval: The study was approved by the Institutional Ethics Committee.

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