

A Cross- Sectional Study on Knowledge Attitude and Practice of Wearing Mask During COVID -19 Pandemic Among Students of Pt.J.N.M. Medical College, Raipur(C.G.)

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Abstract

Background: Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. The best way to prevent and slow down transmission is to be well informed about the disease and how the virus spreads. Face mask has been proved to be effective method to control and prevent Covid 19 infection. This cross - sectional study was designed with objective to assess Knowledge Attitude and Practices of wearing face mask among medical students of Raipur City (C.G.). **Methods:** This cross - sectional observational study was conducted among medical students of Pt. J.N.M. Medical College, Raipur City (C.G.). Quota sampling method was used for sample collection. Survey instrument was adapted from WHO guideline. Data was compiled and analysed in MS excel, data was analysed using binary and multivariate logistic regression with 95% confidence interval. **Results:** This study identifies, 24.63 % of study participants had a good knowledge, 89.00% had positive attitude and 70.33% had good practice related to face mask utilization. Age of the students, gender and class of the students showed significant association with knowledge of wearing face mask. Gender and class of students showed significant association with attitude of wearing face mask, and practice of wearing face mask showed significant association with class of the students. **Conclusion:** Good knowledge among medical students about wearing face mask was 24.63%, majority of students had positive attitude and overall good practice of wearing face mask.

Key words: Attitude, Face mask, Knowledge, Practice

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Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. People infected with the Coronavirus may experience mild to moderate respiratory illness and recover without requiring any special treatment. However, some will become seriously ill and require medical attention. Anyone can get sick with COVID-19 and become seriously ill or die at any age. The best way to prevent and slow down transmission is to be well informed about the disease and modes of transmission[1]. Primary mode of transmission of SARS-CoV-2 is when an infected person is in close contact with another person. The extent to which the virus will transmit between peoples depends on the amount of viable virus being shed and expelled by a person, the type of contact that person has with others, the setting where exposure occurs and preventative measures taken by them[2]. The World Health Organization (WHO) advises the use of masks as part of a comprehensive package of prevention and control measures to limit the spread of SARS-CoV-2, the virus that causes COVID-19. For any mask type, appropriate use, storage and cleaning or disposal are essential to ensure that they are as effective as possible and to avoid an increased transmission risk[1]. Mask use provided a protective effect, use of masks by healthcare workers (HCWs) reduce risk of respiratory virus infection by 80% and use by non- healthcare workers by 47%[3]. New variants of Corona virus are emerging with no definite treatment option available, most effective preventive measure from getting infection is

appropriate utilisation of face mask, so, this study based on knowledge, attitude and practice of face mask use among medical students had been chosen. This study helps to bridge the gaps in knowledge, attitude and practice related to face mask usage.

Material and methods

This cross- sectional study was designed with objective to assess knowledge attitude and practice of wearing face mask among the medical students of Raipur City (C.G.) during period of June to October 2021. Quota sampling method was used in this study. Those medical students, who were present and gave consent was included in this study.

Study instrument

Survey instrument was semi structured questionnaire, adapted from WHO guideline[1]. The questionnaire includes: demographic information which includes age, gender, place of residence, level of education (1st year, 2nd year, 3rd year), category, socioeconomic status, education and occupation of parents. This was self-administered questionnaire in English language.

To measure knowledge regarding using face mask 12 questions were created, correct response for each question was given a score of 1 and score 0, for incorrect response, thus maximum score was 12. Higher score indicating better knowledge about wearing face mask. Types of questions include: 1. Single choice questions from which participants could choose only one response and 2. Array questions in which participants could choose, 'yes' 'no' 'don't know' 'all of the above' for given questions. Those who scored $\geq 80\%$ were categorised in good knowledge and those who scored $< 80\%$ categorised into poor knowledge. To assess attitude, 5 points likert scale was created and total number of questions were 12 in number. Attitude were classified

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as ‘positive’ and ‘negative’ attitude towards wearing face mask. Those who scored $\geq 80\%$ were classified in positive attitude and those who scored $< 80\%$ categorised into negative attitude. To measure practices, participants were given 20 questions. For each right answer of practice score 1 and for wrong practice score 0 were given to the participants. Maximum score was 20 and minimum was 0. Practices were categorised into ‘good’ and ‘poor’. Those who scored $\geq 80\%$ were classified in good practice and those who scored $< 80\%$ were categorised into poor practice. One question was for type of mask study participants use.

Ethical consideration

Ethical permission was obtained by institutional ethical committee. To enhance data quality, all researchers were trained. Before distributing questionnaire, purpose of the study and how to answer to the given questionnaire were explained in detail to the study participants. The collected data were compiled, cleaned and analysed

Knowledge

Table no. 1. Participant response to knowledge related questions

Questions	Correct response	Incorrect response
Wearing a mask protect from COVID-19 infection	327(97.03%)	10 (2.97%)
Types of mask you know for prevention of COVID-19 infection	232 (68.84%)	105 (31.16%)
How many times you can use one surgical mask	255(75.66%)	82 (24.3%)
How often should a fabric mask must be washed	239(70.91%)	98 (29.08%)
How many layers are there in surgical mask	257(76.26%)	80 (23.7%)
How many layers are there in N-95 mask	146(43.32%)	191(56.68%)
What kind of N-95 mask should we use	179(53.11%)	158(46.88%)
What does ‘N’ stand for in ‘N-95’ mask	178(52.81%)	159 (47.18%)
How does ‘N-95’ mask works	202(59.94%)	135 (40.06%)
Why should you wear a mask	306 (90.8%)	31(9.2%)
For how long, wearing surgical mask is effective?	201(59.64%)	136 (40.36%)
In which Biomedical waste bin mask should be ideally disposed off	178(52.81%)	159 (47.18%)
Mean \pm SD	7.93 \pm 2.106	

in MS excel. Descriptive analysis for demographic characteristics were presented in the form of frequencies, proportions and means where appropriate. Data was analysed, using binary and multivariate logistic regression with 95% confidence interval by using online open source software (Statistics Kingdom). From binary logistic regression variables with p value < 0.05 , were considered for multivariate analysis. From multivariate logistic regression variables with significance level at p value of < 0.05 , were taken as statistically significant.

Results

Demographic characteristics

A total 337 students participated in this study. The mean age of study participants was 20.50 ± 1.16 years, 176 (52.22%) were females, 302(89.6%) were Hindu by religion and 142 (42.13%) were from third year students.

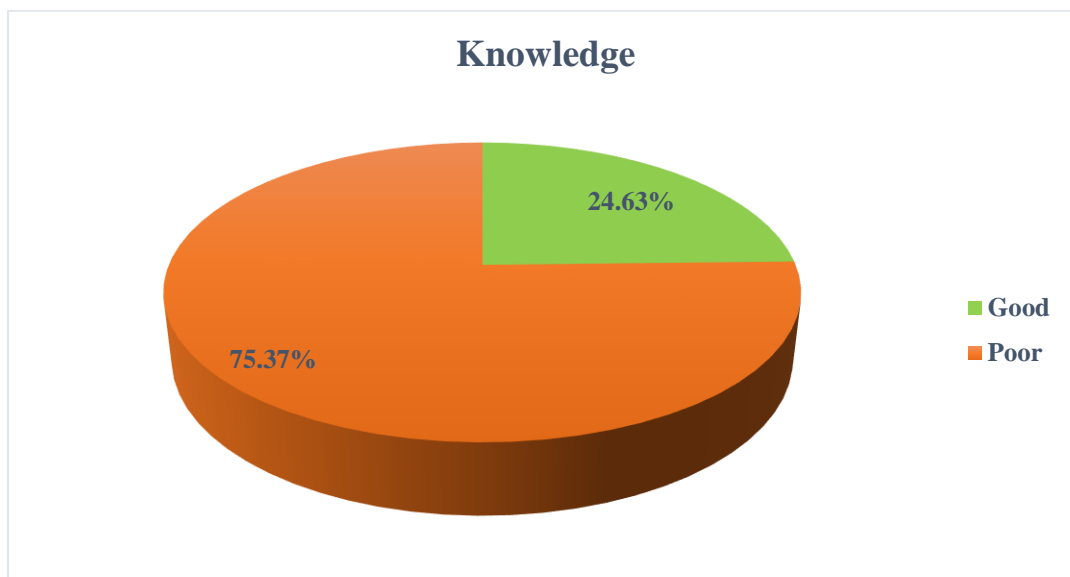


Figure no. 1. Knowledge of medical students about face mask

About knowledge based questions, majority of participants 312 (97.03%), knew, wearing face mask protect from COVID-19 infection, nearly one third (68.84%) of students knew all types of mask can prevent from COVID 19 infection. Only half (52.81%) of the students were aware of biomedical waste bin in which mask should be ideally disposed off (Table no. 1). The mean knowledge score for face mask use was 7.93 ± 2.10 and 24.63 % of study participants had a good knowledge score (figure 1).

Attitude

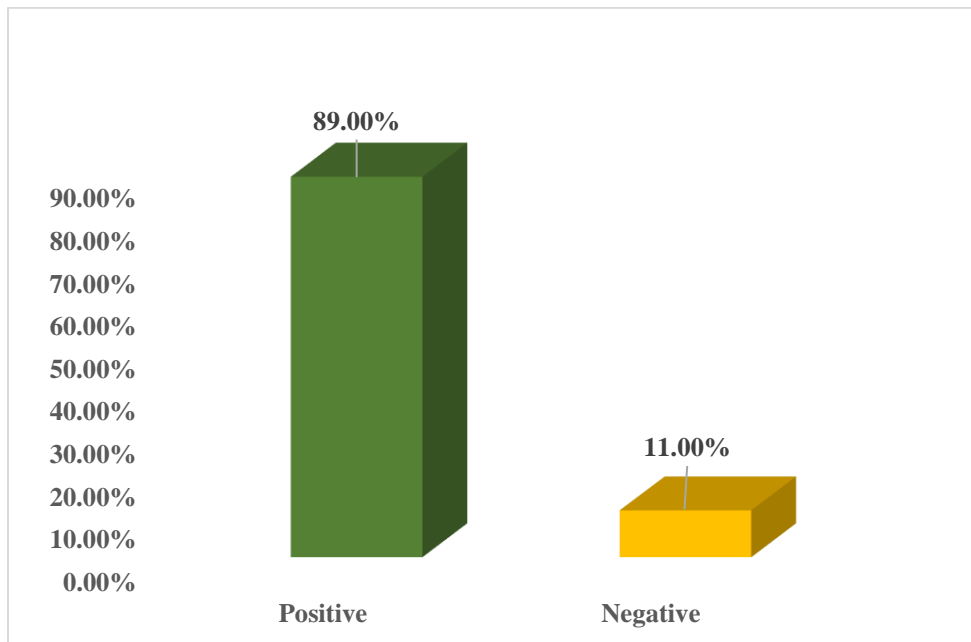


Figure no. 2. Attitude of medical students about face mask

Table no. 2. Participant attitude towards face mask usage

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Wearing a mask just gives people a false sense of security	209 (62.01)	76 (22.55)	29 (6.82)	17(5.04)	6 (1.78)
Everyone, should wear a mask if they leave their home	17 (5.04)	14 (4.15)	19 (5.63)	88 (26.11)	199 (59.05)
If everyone else wears a mask, then it doesn't matter if, I do or not	155 (45.99)	113 (33.53)	36 (10.68)	25 (7.41)	8 (2.37)
Surgical mask is reliable in preventing Covid-19infection.	11 (3.26)	20 (5.93)	71 (21.06)	191(56.67)	44 (13.05)
Fabric mask is reliable in preventing Covid-19infection.	17 (5.04)	55 (16.32)	123 (36.50)	127 (37.68)	15 (4.45)
N-95 is reliable in preventing Covid-19 infection.	12 (3.56)	14 (4.15)	37 (10.97)	138 (40.94)	136 (40.35)
Fabric mask can be used daily without washing on daily basis.	152 (45.10)	113 (33.53)	33 (9.79)	30 (8.90)	9 (2.67)
Wearing a surgical mask protect others from Covid-19 infection.	17 (5.04)	17 (5.04)	50 (14.83)	189 (56.08)	64 (18.99)
Incorrect use of mask may increase the spread of infection	18 (5.34)	13 (3.85)	31 (9.19)	179 (53.11)	96 (28.48)
Mask without exhalation valve should be preferred during Covid-19 pandemic.	26 (7.71)	57 (16.91)	34 (27.89)	100 (29.67)	60 (17.80)
Mask should not be removed while talking	21 (6.23)	15 (4.45)	30 (8.90)	107(31.75)	164 (48.66)
A distance of 6ft should be maintained from a person even while wearing a mask	13 (3.85)	7 (2.07)	41(12.16)	151 (44.80)	125 (37.09)
Mean ± SD	8.87 ± 2.73				

Most of the study participants (89.00%) had positive attitude towards face mask usage (figure 2). In this study majority (85.16%) were agreed that, everyone should wear a mask, when they leave their home. Most of the study participants believed, surgical (70.17%) and N- 95 (81.29%) masks are reliable in preventing Covid 19 infection. Majority of respondent believed, wearing a surgical mask protect others from Covid-19infection. More than two thirds of study participants believed, mask should not be removed while talking (80.41%) and distance of 6ft should be maintained from a person even while wearing a mask (81.90%) (Table no. 2).

Practice

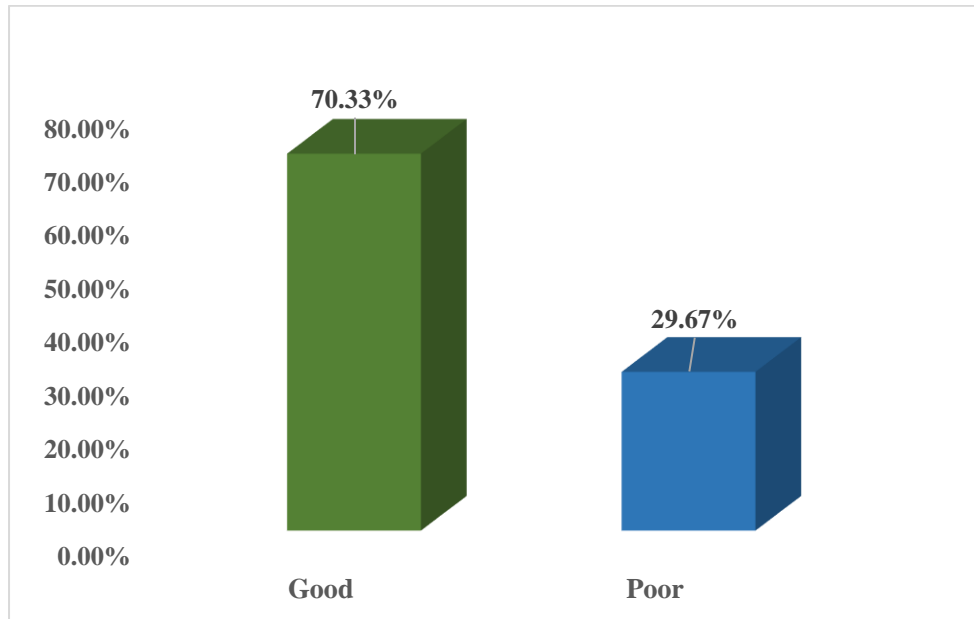


Figure no. 3. Face mask related Practice of medical students.

Table no. 3. Participants practice towards wearing face mask

Questions	Yes (%)	No (%)
Wear a mask to protect yourself against Covid-19	333 (98.81)	4 (1.81)
Do you reuse surgical mask	89 (26.40)	248 (73.59)
Do you reuse N-95 mask	251 (74.48)	86 (25.55)
When leaving your home, do you wear the mask	305 (90.50)	32 (9.50)
Will you continue to wear the mask if it gets wet	46 (13.64)	291 (86.35)
Do you remove your mask while talking	22 (6.53)	315 (93.47)
Do you stand close to a person (less than 6ft.) without wearing a face mask	46 (13.64)	291 (86.35)
Do you share your mask with others	11 (3.26)	326 (96.73)
Perform hand hygiene before wearing the face mask	213 (63.20)	124 (36.79)
Choose the appropriate size of the face mask	295 (87.5)	42 (12.46)
Ensure coloured side of mask is facing outwards before wearing the mask	310 (91.99)	27 (8.01)
Ensure that part with metallic strip on nasal side.	291 (95.25)	21 (4.74)
Press firmly on the metallic strip to the bridge of nose and face	322 (95.54)	15 (4.45)
Extend them ask to cover mouth, nose & chin	316 (96.73)	11 (3.26)
Avoid touching face mask once secured	279 (82.78)	58 (17.21)
Perform hand hygiene after removing the mask	256 (75.9)	81 (24.03)
Touch the elastic band while removing it	304 (90.20)	33 (9.79)
First lower string remove while removing the N95 mask with head loop	139 (41.24)	198 (58.75)
Use mask with exhalation vent	235 (69.73)	102 (30.26)
Dispose the used face mask in a lidded bin	260 (77.15)	77 (22.84)
Mean ± SD	16.19 ± 2.13	

This study identified, out of the 337 participants, majority (70.33%) had good practice related to face mask utilization and mean practice score was 16.19 ± 2.13. 98.81% participants wear face mask to protect themselves from Covid -19 infection. Regarding reuse of mask, 26.40% participants reuse surgical mask and 74.48% participants reuse N- 95 mask. More than 85% of study participants choose appropriate

size of the face mask, ensure coloured side of mask faces outwards before wearing the mask, press firmly on the metallic strip to the bridge of nose and extend them ask to cover mouth, nose & chin and touch the elastic band while removing it. (figure3.)(Table no. 3). These practices comply with right practices of wearing face mask[1].

Table no. 4. Knowledge Attitude and Practice scores among different demographic variables

Variables	Knowledge			Attitude			Practice		
	Good No. (%)	Poor No. (%)	P Value	Positive No. (%)	Negative No. (%)	P value	Good No. (%)	Poor No. (%)	P value
Male	30(18.34)	131(81.36)	0.014	72 (44.72)	89 (55.28)	0.008	111(68.94)	50(31.06)	0.595
Female	53(30.11)	123 (69.89)		104 (59.09)	72 (40.91)		126(71.59)	50 (28.41)	
≤ 20years	27(16.68)	140(83.83)	0.0003	85 (50.80)	82(49.10)	0.628	112(67.07)	55 (32.93)	0.194
≥ 21years	56(32.94)	114 (67.06)		91(53.52)	79(46.47)		125(73.52)	45 (26.47)	

1st Year	22(15.49)	120(84.51)	<0.001	65 (45.77)	77(54.23)	0.0004	88 (61.97)	54 (38.03)	0.003
2nd year	26 (20.8)	99 (79.2)		60(48.0)	65 (52.0)		90 (72.0)	35 (28.0)	
3rd year	35 (50.0)	35 (50.0)		51(72.86)	19(27.14)		59 (84.29)	11 (15.71)	
Upper class	18(32.73)	37 (67.27)	0.217	32 (58.18)	23(41.82)	0.306	44 (80.0)	11 (20.0)	0.215
Middle class	58(22.39)	201(77.61)		135(52.12)	124(47.88)		178(68.73)	81(31.27)	
Lower class	7 (30.43)	16 (69.57)		9 (39.13)	14 (60.87)		15 (65.22)	8 (34.78)	

Among study participants females, age \geq 21years, 3rd year students and students with middle socio- economic class had good knowledge score. The association between knowledge score, gender, age and class of the students were found to be statistically significant (p value $<$ 0.05). Attitude score was same as knowledge score, females, age \geq 21years, 3rd year students and students with middle socio- economic

class had more positive attitude towards wearing mask. The association between attitude, gender and class of the students were statistically significant (p value $<$ 0.05). Practice score was more in females, \geq 21years, 3rd year students and students with upper socio- economic status (Table no. 4).

Table 5: Binary analysis demographic variables related to knowledge attitude and practice scores

Variables	Knowledge		Attitude		Practice	
	Odds	p value	Odds	p value	Odds	p value
Age	2.5471	<0.001	1.1112	0.6287	0.73	0.1938
Gender	1.8816	0.01	1.7855	0.008	0.8810	0.5953
Year of students	2.3362	<0.001	1.6369	0.0006	0.5709	0.0005
SES						
Upper class	0.8002	0.40	0.7121	0.1449	1.5291	0.09830
Middle class						
Lower class						

Those students who were \geq 21 years of age (2.54 times), females (1.88 times), and 3rd year students (2.34) were more likely to have knowledge about wearing face mask. The association between age (p $=$ <0.001), gender (p = 0.014), class of students (p = <0.001) with the knowledge students was found to be significant. Only class of students had significant relation with practice of wearing face mask (p = 0.00058) (Table no.5).

Table no.6: Multivariate analysis of demographic variables associated with knowledge attitude and practice scores

Variables	Knowledge		Attitude		Practice	
	Odds	p value	Odds	p value	Odds	p value
Age	1.6670	0.1042				
Gender	2.0269	0.01	1.7956	0.009		
Year of students	1.9923	0.0004	1.6430	<0.001	0.5709	0.0008

Multi variate logistic regression analysis showed, age, gender and class of the students had significant association with knowledge of wearing face mask. Gender and class of students to showed significant association with attitude of wearing face mask, and practice of wearing face mask showed independent significant association with class of students (Table no.5).

Those students with age \geq 21 years (1.67 times), females (2.03 times) and third year students (1.99 times) had more likely to have good knowledge about wearing face mask than other groups. Females (1.79 times) and third year students were (1.64 times) more likely to have positive attitude of wearing face mask.

Discussion

This was a cross – sectional study with objective to assess knowledge, attitude and practice about wearing face mask among medical students. Face masks are used from prevention to COVID 19 infection, in addition to washing hands or using an alcohol based hand rub and maintaining distance at least 1 meter apart from others[4]. To effectively prevent disease transmission, it is necessary to have knowledge of wearing face mask and in addition to positive attitude and good practices. This study included 337 study participants of mean age 20.50 years (SD = 1.16) with female (52.22%). Majority (97.03%) of study participants were aware of, wearing a mask protect from COVID-19infection. Participants with age group \geq 21years had good knowledge (32.94%) as compared to age group of \leq 20 years (16.68%). This study finding is similar to study done in Uttar Pradesh, India[5]. Most of the study participants were from first year, followed by second and third year. There was low level of good knowledge among the study participants. Study done by Tajvar A et al. and Kumar et al. had the similar findings in their studies[6,7]. This finding is in contrary to studies done in

Kathmandu, Vietnam, Côte d'Ivoire and Nepal [8,9,10,11]. In this study participants were aware of importance of wearing face mask, types of mask, how to use mask and proper disposal of face mask. But still there was overall low level of good knowledge of face mask utilisation, which indicates awareness about proper mask utilisation needs to be focussed. In this study there was significant relationship between participants educational level and knowledge level. As educational level increased, their knowledge improved as well. This study finding was similar with results of Tajvar A et al[6]. This study found that, majority had positive attitude towards usage of face mask against COVID -19 infection. This study finding was similar to other studies[12,11,6]. Contrary to this study 54.7% health professionals at federal police health facilities in Addis Ababa had negative attitude towards face mask usage[14].The result of this study found, more than 80% participants believed N-95 mask is reliable, while less half of the participants believed fabric mask is reliable in preventing COVID -19 infection. This finding is similar to another study[6]. This study identified, good practice among medical students about face mask utilization. Majority use surgical mask, while only 11% use fabric mask. Nearly more than two third of study participants use mask with exhalation vent, which is not recommended as, if mask wearer is infected with COVID -19, mask with exhalation valve allow unfiltered air to escape, which may pose a risk to surrounding people[15]. 90.50% participants wear mask while leaving home and more than half perform hand hygiene before and after using face mask, study findings of Lee et al. is not in accord with this study (16). Majority of the study participants extend the mask to cover mouth, nose & chin. This finding is in accordance with study by Sayare B et al[5].Results of this study found, only class of the students had significant relation with knowledge, attitude and practice of mask usage among medical students. Age had only significant relation with

knowledge, gender had significant relation with both knowledge and attitude. With emergence of new variants of corona virus, use of masks with physical distancing, ventilation and hand hygiene still remain key to reducing transmission of SARS CoV-2[17].

Conclusion

Since the new variants of Corona virus is emerging, in addition to vaccination, appropriate use of mask can significantly reduce the transmission of virus. This study finds out poor scoring in knowledge domain, so, it is recommended, information education and communication activity regarding use of face mask needs to be strengthened.

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Conflict of interest

None declared

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