



## **Knowledge, Practices and Attitude of Healthcare Providers about Using Face Mask to Limit the Spread of the Novel Coronavirus Disease**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author NJA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors OSA, AAA and REA managed the analyses of the study and managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aim:** There is evidence that health care providers have insufficient knowledge and poor practices regarding the use of surgical mask. Therefore, this study aimed to explore the knowledge, practices and attitude of healthcare providers about using face mask in order to limit the spreading of the novel coronavirus disease.

**Methodology:** This was a cross sectional pilot study included a questionnaire about the knowledge of health care workers regarding the use of surgical face mask to prevent the new COVID-19 spreading and about their practices and the attitude of them regarding the use of surgical face mask to limit the new COVID-19 exposure.

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**Results:** About 86.21% of health care workers said that the correct way of using surgical face mask is White side facing in and about 65.52% of them said that N-95 mask is the mask type that actually protect against COVID-19. All of the respondents reported that they wear a mask in public places to protect themselves against COVID-19 and that they wear a mask in hospital premises to protect themselves against COVID-19 (100.00%).

**Conclusion:** The Knowledge, attitude, and practice of health care providers regarding the use of surgical face masks were found to be good but still more knowledge is required about several aspects such as the types of masks, the duration of using masks and the disposal of the masks.

*Keywords: Attitude; face mask; healthcare providers; knowledge; Novel Coronavirus disease; practices.*

## 1. INTRODUCTION

At the end of December 2019, several cases of pneumonia of unknown cause in China were reported to the World Health Organization (WHO). The identified pathogen was called severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) [1]. on 11th March 2020, World Health Organization declared coronavirus disease 2019 (COVID-19) as a global pandemic [2]. SARS-CoV-2 had spread to more than 200 countries and territories, and accounted for Millions of confirmed cases of COVID-19 [3].

Good knowledge, a positive attitude and good practice of health care workers about protective measures such as protective clothing, goggles, wearing gloves and using a facemask are vital to deal with infected patients with minimum risk [4]. The virus spreads mainly between persons through their respiratory droplets, which are produced when an infected person sneezes or coughs, or sometimes by touching contaminated objects or surfaces and then touching their own nose, mouth or their eyes [5].

Health care workers have a higher risk to develop severe COVID-19 because they are in close contact with confirmed COVID-19 patients. The latest figures show that there were thousands of Health care workers getting infected with high mortality rates [6]. In order to minimize risk, health care professionals should follow the recommended measures of infection control departments that include mainly hand hygiene and wearing a face mask. Face mask is very important because it provides a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment [7].

World Health Organization and the Centers for Disease Control and Prevention are strongly recommend the use of face mask among health

care workers as a standard for transmission-based precaution [8,9], these masks should be used correctly when its use is becoming highly prevalent [10] There is evidence that health care providers have insufficient knowledge and poor practices regarding the use of surgical mask [11]. Therefore, this study aimed to explore the knowledge, practices and attitude of healthcare providers about using face mask in order to limit the spreading of the novel coronavirus disease.

## 2. METHODOLOGY

This was a cross sectional pilot study that included a questionnaire consisting of 3 parts. The first part included information about the demographic characteristics, the second part about the knowledge of health care workers regarding the use of surgical face mask to prevent the new COVID-19 spreading and contained 9 questions and the third part about the practices and the attitude of them regarding the use of surgical face mask to limit the new COVID-19 exposure and contained 6 questions.

The questionnaire was adapted from a previous study [5]. To ease the completion of the survey it is converted to online survey using google forms because it is difficult to meet the health care providers due to the spreading of new coronavirus disease.

All health care workers were included, so other employees were excluded. Moreover, if the survey was incomplete it was excluded. There were no any risks related to participating in the study. The data were collected without identifying participants' names or other identifiable information.

The data were collecting using excel sheet and the descriptive data were represented as numbers and Percentages.

### 3. RESULTS AND DISCUSSION

The survey was completed by 29 health care workers. About 72.41% of health care workers were less than 40 years old, 68.97% of them were males and about 37.93% of them were physicians. Most of the respondents have an experience of less than 11 years (55.18%). Demographic data of healthcare providers are shown in Table 1.

“White side facing in” is the correct way of using surgical face mask, 86.21% of the health care workers answered the question correctly. The surgical mask contains three layers, more than 86% of the respondents said that it includes 3 layers, 6.9% of them said that it contains four layers and 6.9% said it contains 2 layers. About 79.31% of the health care workers said that wearing a surgical mask protect from COVID-19 spreading. Middle layer of the mask acts as a filter media barrier, 65.52% of the respondents answered the question correctly.

Regarding the types of masks, 95% BFE and PFE is the mask type that actually protect against COVID-19, about 65.52% of health care providers responded correctly. A physician can wear a surgical mask for 8 hours, only 51.72% answered the question correctly and about 41.38% said that it can be used only for 4 hours. surgical mask should cover nose, mouth, and chin, 86.21% of the respondents answered correctly.

The main purpose of the metal strip on a surgical mask is to fit on the nose, as reported by 100% of the respondents. The cloth facial mask is not as effective as a regular surgical facial mask, 82.76% of the health care workers answer the

question correctly. Knowledge about the correct usage of masks is shown in Table 2.

Similar to the results of the present study, Kumar et al reported that about 56.4% knew the correct way of wearing a surgical mask, 68.9% knew that there are three layers in a surgical mask, 53% knew how to identify the correct filter media barrier and around 64.8% of participants knew the correct efficiency of masks that can actually protect against COVID-19. In contrast to the present study results, Kumar et al reported that about 75.6% were aware of the maximum duration of wearing a face mask [5]. Regarding the type of masks, most of the respondents in the present study answered correctly that 95% BFE and PFE masks is the best type to protect them from COVID-19. Similarly, Yap et al reported that all healthcare workers were required to don personal protective equipment including N-95 masks during their working hours [12].

Only 3.45% of the health care providers said that if there is a need to talk to their patients, they will remove their masks. Only 27.59% of them said that If they are not sick, they will store the used surgical mask in a bag for later use. All of the respondents said that they wear a mask in public places to protect themselves against COVID-19 (100.00%) and all of them reported that they wear a mask in hospital premises to protect themselves against COVID-19 (100.00%).

About 68.97% of the health care professionals answered correctly that they dispose of their mask in the yellow-coded bag. Moreover, 93.10% of them said that they Are confident enough to know the correct steps of wearing a face mask. Practices and attitude about the correct usage of masks are shown in Table 3.

**Table 1. Demographic data of healthcare providers**

Variable	Category	Number	Percentage
Age	20-29	12	41.38%
	30-39	9	31.03%
	40-49	4	13.79%
	50 or More	4	13.79%
Gender	Male	20	68.97%
	Female	9	31.03%
Occupation	Physician	11	37.93%
	Pharmacist	8	27.59%
	Others	10	34.48%
Years of experience	1-2	8	27.59%
	2-10	8	27.59%
	11-20	7	24.14%
	21-30	3	10.34%
	31 or more	3	10.34%

**Table 2. Knowledge about the correct usage of masks**

Statement	Response	Number	Percentage
Which is the correct way of using surgical face mask to protect against COVID-19?	White side facing in	25	86.21%
	White side facing out	4	13.79%
How many layers are there in a surgical mask?	Four	2	6.90%
	Three	25	86.20%
	Two	2	6.90%
Can wearing a surgical mask protect you from COVID-19?	Yes	23	79.31%
	No	6	20.69%
Which layer acts as a filter media barrier?	First layer	5	17.24%
	Last layer	5	17.24%
	Middle layer	19	65.52%
Which type of masks actually protect against COVID-19	91% BFE and PFE*	1	3.45%
	95% BFE and PFE	19	65.52%
	97% BFE and PFE	3	10.34%
	99% BFE and PFE	6	20.69%
How long can you wear a surgical mask?	1 hour	1	3.45%
	2 hours	1	3.45%
	4 hours	12	41.38%
	8 hours	15	51.72%
For proper wearing, to which extent the surgical mask should cover?	Nose only	0	0.00%
	Nose and mouth	4	13.79%
	Nose, mouth, and chin	25	86.21%
What is the purpose of the metal strip on a surgical mask?	To fit on the nose	29	100.00%
	To fit on the chin	0	0.00%
	No purpose	0	0.00%
Is the cloth facial mask as effective as a regular surgical facial mask?	Yes	5	17.24%
	No	24	82.76%

\*PFE: particle filtration efficiency, BFE: bacterial filtration efficiency

**Table 3. Practices and attitude about the correct usage of masks**

Statement	Response	Number	Percentage
During clinics, if there is a need to talk to the patient, will you remove your mask?	Yes	1	3.45%
	No	28	96.55%
If you are not sick, do you store the used surgical mask in a bag for later use?	Yes	8	27.59%
	No	21	72.41%
Do you wear a mask in public places to protect yourself against COVID-19?	Yes	29	100.00%
	No	0	0.00%
Do you wear a mask in hospital premises to protect yourself against COVID-19?	Yes	29	100.00%
	No	0	0.00%
In which color-coded bag you dispose of your mask?	Black-coded bag	2	6.90%
	Blue-coded bag	6	20.69%
	Red-coded bag	1	3.45%
	Yellow-coded bag	20	68.97%
Are you confident enough to know the correct steps of wearing a face mask?	Yes	27	93.10%
	No	2	6.90%

Similar to the result of the present study, Kumar et al stated that about 13.8% of participants used to remove the mask while talking to the patient and that 20.2% reused the mask. In contrast to the result of the present study Kumar et al stated that only 44.9% correctly used the yellow-coded bag for disposal of the face mask [5].

The present study also showed that it is better to dispose usable masks properly at the end of the day than re-using it. But if there is a shortage in the availability of the masks, previous studies showed that if the needed quantity of masks isn't available health care providers can use the mask again but it is important to fold the mask in such a way that the outer surface is held inward and

after that it should be stored in a clean sealable paper bag or container [13-15].

Additionally, the present study shows that the health care workers had a good knowledge regarding the safe disposal of biomedical waste as recommended by the color-coded bin system for proper disposal of biomedical waste in hospitals that was established by WHO [16].

#### 4. CONCLUSION

The Knowledge, attitude, and practice of health care providers regarding the use of surgical face masks were found to be good but still more awareness is required about several aspects such as the types of masks, the duration of using masks and the disposal of the masks. Workshops, Conferences and continuous medical education lectures are required to improve the awareness of health care providers regarding the proper use of face mask.

#### DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

#### CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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