

## Research Article

# THE SURGICAL MASK WEARING BEHAVIOR TO PREVENT AND CONTROL THE COVID-19 PANDEMIC SITUATION AMONG NURSING STAFF IN THE TERTIARY CARE OF THAILAND

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### ABSTRACT

The COVID-19 is a respiratory disease caused by SARS-CoV-2. A new corona virus was discovered in 2019. The virus is thought to spread mainly from person to person through respiratory droplets produced when an infected person coughs, sneezes, or talks. The objective of this study was to explore the surgical mask wearing behaviour and investigate the factors relationship with surgical mask wearing behaviour to prevent and control COVID-19 pandemic among nursing staff in the tertiary care of Thailand. This study was a survey research recruiting 206 nursing staff worked in the tertiary care between January to May 2021 by purposive random sampling. The data were collected using the online structural questionnaire consisted of 5 parts. Data were analysed by using descriptive statistics and Pearson correlation coefficient. The result revealed that the majority of the samples had a high level of surgical mask wearing behaviour (89.9%). Factors which remained significantly associated with surgical mask wearing behaviour were attitude about surgical mask wearing ( $p < 0.001$ ). The finding suggests that the administrators should focus on attitude about surgical mask wearing and impose a policy or guidance for changing the appropriate behaviour of surgical mask wearing behaviour to prevent and control COVID-19 pandemic among nursing staff and all of the physician in the hospital.

**Keywords:** COVID-19, Pandemic, Nursing, Surgical Mask.

### INTRODUCTION

Corona viruses are a type of virus. There are many different kinds, and some cause disease. A corona virus identified in 2019, SARS-CoV-2, has caused a pandemic of respiratory illness, called COVID-19.<sup>1</sup> Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment.<sup>2</sup> Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.<sup>3</sup> Some people who are infected may not have symptoms. For people who have symptoms, illness can range from mild to severe.<sup>4</sup> COVID-19 can be severe, and has caused millions of deaths around the world as well as lasting health problems in some who have survived the illness.<sup>5</sup> In addition, the corona virus can be spread from person to person.<sup>6</sup> As of everyone known, the corona virus is spread through droplets and virus particles released into the air when an infected person breathes, talks, laughs, sings, coughs or sneezes.<sup>7</sup> The first case of COVID-19 was reported Dec. 1, 2019<sup>8</sup>, and the cause was a then-new corona virus later named SARS-CoV-2. SARS-CoV-2 may have originated in an animal and mutated to cause illness in humans.<sup>9</sup> In the past, several infectious disease outbreaks have been traced to viruses originating in birds, pigs, bats and other animals that mutated to become dangerous to humans.<sup>10</sup> The research was continued, and more studied may reveal how and why the corona virus evolved to cause pandemic disease.<sup>11</sup> The physicians mentioned that the symptoms of COVID-19 were showed up in people within two to 14 days of exposure to the virus. A person infected with the corona virus is contagious to others for up to two days before symptoms appear, and they remain contagious to others for 10 to 20 days, depending upon their immune system and

severity of their illness.<sup>12</sup> COVID-19 symptoms were included as follows; cough, fever or chills, shortness of breath or difficulty breathing, muscle or body aches, sore throat, new loss of taste or smell, diarrhea, headache, new fatigue, nausea or vomiting, congestion or runny nose. Moreover, some people infected with the corona virus have mild COVID-19 illness, and others have no symptoms at all. In some cases, COVID-19 can lead to respiratory failure, lasting lung and heart muscle damage, nervous system problems, kidney failure or death at all.<sup>13</sup> The COVID-19 was diagnosed through a laboratory test and some people with the corona virus do not have symptoms at all.<sup>14</sup> Regarding the outbreak of novel corona virus (COVID-19) that was first founded from Wuhan, China. The weekly epidemiological and operational updates May 2021 reported that globally, as of May 2021, there have been 160,074,267 confirmed cases of COVID-19, including 3,325,260 deaths, reported from WHO. A total of 1,264,164,553 vaccine doses have been administered.<sup>15</sup> Focusing in Thailand situation of COVID-19 pandemic, WHO reported that there have been 85,005 confirmed, included 421 deaths from the virus transmission. So, the number of COVID-19 cases will be increased in every day. The Mask wearing is still importance to protect themselves from the infection.<sup>15</sup> The way of prevent and control the COVID-19 distribution were consisted of mask-wearing, hand hygiene and physical distancing are essential to preventing the transmissions of the virus COVID-19. COVID-19 vaccine is the most efficacy to pause the distribution of virus infection. The government has been authorized for emergency use of vaccination programs to prevent the spread COVID-19 pandemic, So, physical distancing, mask-wearing, hand hygiene and staying away from others are important to practices continuously.<sup>16</sup> Conclusion, wearing a surgical mask is a major issue in the fight against the spread of the COVID-19 pandemic. However, mask wearing of healthcare workers was good practiced guidance for protection while they had the duty to take care and provide the treatment for patients. This study was aimed to appraise the surgical mask behavior and factors related to behavior among nursing staff in the tertiary care of

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Thailand, because there was responded many patients and they mostly had the severe and complex diseases. The finding can lead to express the policy and plan to protect their health due to work.

## MATERIAL AND METHOD

The study was the survey research to investigate the surgical mask wearing behavior and investigate the factors relationship with surgical mask wearing behavior to prevent and control COVID-19 pandemic among nursing staff in the tertiary care of Thailand. The population was the nursing staff who were worked in the tertiary care level. The subjects were recruited by using the purposive random sampling technique based on the inclusion and exclusion criteria. The study was used subjects included 206 nursing staff. The study period was imposed during to January to May 2021.

### Population and Sample

The population in this study was the nursing staff who were aged range between 18-59 years old and operated in the tertiary care at least 1 year. The participants in this study were recruited by using the purposive random sampling. A sample size of this study was calculated based on analysis of Daniel equation.<sup>17</sup> Thus, the sample size used for this study was 206 cases. The data were collected by using the online structured-questionnaire. The inclusion criteria in this study were the samples of both men and women who were placed on the tertiary care unit from the central part of Thailand. Furthermore, they had good level of consciousness and could communicate, or to be assessed with all test. The samples were participated in the interview and data collection by voluntary. The researchers were informed the participants about the study protocol and the risk after they participated with the study and they signed a written consent form.

### Measurement Tool

The instruments of this study were an interviewed form and was collected the data by using the google form which consisted of 5 parts. The research was established the instrument from the PRECEED-PROCEED Model and the literature review related with COVID-19. From the COVID-19 pandemic situation can cause to trouble for data collection by face-to-face interview. Moreover, the researchers have been used the online chance for agglomerating the data. The research tool and quality testing were measured the validity by peer from 3 experts on behavior, epidemiology and infectious diseases and reported the IOC value. The IOC value was ranged between 0 to 1.0. The reliability was tested in 30 nursing staff in the same area as the study area whose characteristics were similar to those of the participants. The reliability of Cronbach's alpha coefficients was more than 0.80, it was acceptable of tool. The detail of the instrument can describe as follows: Part I: The general characteristics questionnaire: The total of this part was 6 questions. This part was to record the general characteristics data such as gender, age, income, congenital disease, mask available, Mask campaign and department. Part II: The knowledge of COVID-19 questionnaire; The total of this part was 12 questions. Each question has 3 choices; "agree" or "unsure" or "disagree". When answer "agree", the score 2 was given, while score 1 was given in the answer "unsure", while score 0 was given in the answer "disagree". The high total scores indicated good level of COVID-19 knowledge. Part III: The attitude of surgical mask wearing questionnaire; The total of this part was 10 questions. This part was the closed-ended question. Each question has 3 choices; "agree." or "unsure" or "disagree". When answer "agree", the score 2 was given, while score 1 was given in the answer "unsure", score 0 was given in the answer

"disagree". The high total scores indicated good level of attitude on surgical mask wearing. Part IV: The surgical mask behavior questionnaire; The total of this part was 13 questions. Each question has 5 choices; "definitely agree" or "agree" or "unsure" or "disagree" or "definitely disagree". When answer "definitely agree", the score 5 was given, while score 4 was given in the answer "agree", the score 3 was given in the answer "unsure", the score 2 was given in the answer "disagree" and the score 1 was given in the answer "definitely disagree". The high total scores indicated good level of surgical mask behavior.

### Ethical Consideration

This study was approved by the Ethics Review Committee for Research Involving Human Research Subjects. The researcher and co-research were informed the participants about the study protocol and the risk of the intervention program before they signed a written consent form.

### Data Collection

The data collection was performed as follows:1.) The researcher was requested an introduction letter from the Faculty of Public Health, Valaya Rajabhat University, Thailand to send for the Director of the hospital located in the central part of Thailand, to explain the objectives of this study and asked for permission to collect data. After the Directors was approved the research, the researcher will be started to perform the procedure2.) The researcher and co-researcher were trained to use the instrument in this study for evaluating in all of factors and outcome parameter before collecting data3.) The researchers and co-researcher were collected data by meeting the subject and introducing themselves, to explain the study objectives and ask for participation in this study. The subjects were explained that they could refuse or withdraw from the study at any time. When the subjects clearly understood the procedure, they were asked to sign the informed consent form. Then, the researchers started to collect data4.) The researchers collected data from the nursing staff. The data were collected by online-questionnaire 5.) After the samples were completely answered the questionnaires, the researcher checked the completeness and contract to thank them for cooperation. The researchers were rechecked before analyzing data by statistical procedure.

### Statistical Analysis

The descriptive statistics were used to explore the general characteristics and the description of all variables consisted of number, percentage, range, mean, standard division. The relationship between factors related to behavior among nursing staff in the tertiary care of Thailand, because there was responded many patients and they mostly had the severe and complex diseases. The finding can lead to express the policy and plan to protect their health due to work.

## RESULT

A total of 206 nursing staff who were participants and assessed the tool in this research. The general characteristics showed that a total of all samples were 31.0±6.25 years old with an average of monthly income was 24,219.6±9,872 Thai Bath. The participants were female more than male (62.8%). The majority of the samples were placed on anesthesiology (34.0%). department followed by emergency and operating department. They mostly had no diseases (85.4%), supported the mask from hospital (87.9%), known the mask campaign (85.0%). From the study of 206 participants, the online structural-interview form was used for evaluating the all of factors and

outcome variable. It was found that the score of the surgical mask behavior ranged from 5-65 with mean of 58.9 (SD. = 2.03). By the defined score rate point of the behavior, the highest proportion had

high level of surgical mask behavior (89.9%), followed by moderate and low level of surgical mask behavior (7.2% and 2.9%, respectively).

**TABLE 1 The number and percentage of the subject by general characteristics (n= 206)**

General Characteristic Variables	Number	Percentage
<b>Age (years)</b>		
Mean± SD. = 31.0±6.5 Rang= 20.0-56.0		
<b>Gender</b>		
Male	77	37.4
Female	129	62.6
<b>Monthly Income</b>		
10,000-20,000 Thai Bath	84	40.8
20,001-30,000 Thai Bath	91	44.2
30,001-40,000 Thai Bath	15	7.3
>40,000 Thai Bath	16	7.8
Mean± SD.=24,219.6±9,872.1 Range= 10,000-50,000 Thai Bath		
<b>Congenital Diseases</b>		
Yes	30	14.6
No	176	85.4
<b>Department</b>		
Emergency	33	16.0
Operating	23	11.2
Anesthesiology	70	34.0
General Surgery	15	7.3
IPU	9	4.4
OPD	10	4.9
Orthopedic Surgery	11	5.3
Obstetrics and Gynecology	18	8.7
Palliative care	17	8.3
<b>Mask Available</b>		
Hospital Supporting	181	87.9
Self-Buying	25	12.1
<b>Mask Campaign</b>		
Yes	175	85.0
No	31	15.0
<b>Surgical Mask behavior</b>		
Poor	6	2.9
Moderate	15	7.2
High	185	89.9

According to the data analysis of association between all factors and surgical mask behavior, it was found that aged ( $r = 0.210$ ,  $p = 0.004$ ) and the attitude about surgical mask wearing ( $r = 0.452$ ,  $p < 0.001$ ).

**TABLE 2. The analysis of factors associated with surgical mask behavior among nursing staff by using the Pearson correlation coefficient(n= 218)**

Variables	r	p-value
Age	0.210	0.222
Monthly income	0.133	0.126
Knowledge about COVID-19	0.023	0.533
Attitude about surgical mask wearing	0.452	<0.001*

\*Statistically significant at the 0.05 level  $p$ -value<0.05.

## DISCUSSION

The study design was a survey research. The majority of participants were high level of surgical mask behavior (89.9%). According to the factor related with surgical mask behavior were attitude about mask wearing. The result is consistent with the study of Khumsaen, N.<sup>18</sup> whose study knowledge, attitudes, and preventive behaviors of COVID-19 among people living in amphoeU-thong, Suphanburi Province. This study was the survey research aims to examine levels of knowledge, attitudes, and preventive behaviors of Covid-19 along with associations between the factors during the Covid-19 pandemic. The results showed that educational levels, knowledge of the disease, and attitudes toward Covid-19 were positively significantly related to preventive practices of Covid-19 at level .05. Similarly, with Zhong, B.L.<sup>19</sup> whose study knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak. The aim of this study was to investigate the KAP towards COVID-19 of Chinese residents during the rapid rise period of the COVID-19 outbreak. The result showed that, in multiple logistic regression analysis, the COVID-19 knowledge score (OR: 0.75-0.90,  $p < 0.001$ ) was significantly associated with a lower likelihood of negative attitudes and preventive practices towards COVID-2019. Moreover, Norazryana M.D.<sup>20</sup> whose study Attitude toward protective behavior engagement during COVID-19 pandemic in Malaysia. The finding showed that the multiple regression analysis suggests the roles of e-government and social media to be significantly related to people's attitudes to engage in protective behavior. Conclusion, wearing a mask is one of the simplest ways to reduce spread of COVID-19, and persuading people and communities to embrace mask use is a core intervention for curbing the pandemic. The World Health Organization (WHO)<sup>19</sup>, the U.S. Centers for Disease Control and Prevention (CDC)<sup>20</sup>, and numerous other government and public health agencies have recommended that people use masks in public settings when SARS-CoV-2, the virus that causes COVID-19, is being transmitted in the community. Especially in the health care provider, they were often to communicated with the patients and easy to receive the virus transmission from other. In the duration of COVID-19 pandemic, mask-wearing in the nursing staff and other can reduce the spread of COVID-19. So, as scientific understanding of COVID-19 has evolved, the importance of widespread use of masks has become clear, in part because of the transmission dynamics of the virus. People with COVID-19 are most infectious early in the course of disease, including before symptoms develop, and a significant proportion of people infected with COVID-19 never develop symptoms at all. The prevalence of infections transmitted from people with no symptoms makes wearing masks crucial, even among people who feel healthy. Thereby, the promotion of mask-wearing in the nursing staff and physician should be part of a package of measures that also includes hand washing, physical distancing, interventions to reduce indoor exposures, finding infected people and their contacts quickly, implementing rapid and supportive isolation and quarantine services and providing COVID-19 vaccines when available.

## LIMITATION AND RECOMMENDATIION

There was limitation in this study, it was explained that the study design was a survey research which could not tell the cause-effect relationship. Although the survey research was appropriate for this study in terms of shorter time of investigation the relationship between factors and outcome variable. So, the results of this study may not explain about the causal-effect between variable examined. Therefore, a cohort study or case-control design would be useful for future research so that more implication will be better justified. For the

recommendation from this study, the administrative director can bring the factor related with the outcome to plan and impose a policy or guidance for changing the appropriate behavior of surgical mask behavior. The further studies should select the advance statistic for investigating the causal model to find the causal effect between the independent variables and the dependent. The mixed-method is the best design to understand the cause by using in-depth interviews or focus group for the qualitative part.

## CONCLUSION

This survey research was to explore the surgical mask wearing behavior and investigate the factors relationship with surgical mask wearing behavior to prevent and control COVID-19 pandemic among nursing staff. The result showed that only attitude about surgical mask wearing were associated with surgical mask wearing behavior. Conclusion, the administrative board of the hospital should promote the proper attitude about the surgical mask wearing.

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