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# Knowledge, attitude, and practice towards COVID-19 among student nurses in Manila, Philippines: A cross-sectional study

Earl Zedrick S. Quisao<sup>1</sup>, Raven Rose R. Tayaba<sup>1</sup>, and Gil P. Soriano<sup>1,2\*</sup> 

## Abstract

**Background:** Assessing the current understanding of future health care workers about the COVID-19 is very important in order to identify gaps that affect their perceptions and responses, which they can integrate into the people in the community.

**Objective:** This study aimed to investigate the knowledge, attitude, and practice towards COVID-19 of student nurses in Manila, Philippines.

**Methods:** This study utilized a descriptive cross-sectional survey of 314 individuals from October 2020 to December 2020 to evaluate the association of different factors to knowledge, attitude, and practice towards COVID-19. Frequency, percentage, mean, standard deviation, *t*-test, and one-way ANOVA were used to analyze the data gathered.

**Results:** The survey revealed that the respondents have a mean knowledge score of 18.76 (*SD* = 1.64), a mean score for attitude of 26.58 (*SD* = 2.71) and a mean score for practice of 4.26 (*SD* = 0.93). A significant difference were noted in terms of year level with level 3 having a higher mean score ( $M = 19.01$ ,  $F = 2.696$ ,  $p = 0.046$ ) compared to other levels and type of school, with public university students having a higher level of knowledge ( $M = 18.97$ ,  $t = 2.070$ ,  $p = 0.039$ ). In terms of attitude, females have higher mean scores ( $M = 26.85$ ,  $t = -2.630$ ,  $p = 0.009$  and students from public university have higher scores ( $M = 2.81$ ,  $t = -4.406$ ,  $p = 0.000$ ) than students from private university. For practice, a significant difference was noted in terms of year level, with level 3 students having a higher mean score ( $M = 4.42$ ,  $F = 3.180$ ,  $p = 0.024$ ) compared to other year levels.

**Conclusion:** Filipino student nurses have a high level of knowledge about COVID-19 and are mainly optimistic about controlling the pandemic. Nevertheless, having constant reminder from the authorities and health care professionals are the solution to aid public knowledge and comprehension relating to COVID-19.

## Keywords

COVID-19; nursing; students; knowledge; attitude; practice; Philippines

A new strain of flu-causing coronavirus has been spreading and affecting the lives of many. Reports showed that the first case was discovered in Wuhan, China, in December 2019, making Wuhan its place of origin ([World Health Organization, 2020a](#)). Formerly known to be 2019-nCoV, this new strain named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) causes the illness coined as the Coronavirus disease 2019 (COVID-19) having mild

symptoms of fever, dry cough, and tiredness to many severe symptoms of chest pain, shortness of breath or difficulty of breathing ([World Health Organization, 2020b](#)).

Experts believe that the virus can easily be transmitted when susceptible hosts inhaled small droplets that contain the virus, which is expelled from an infected person's nose or mouth through coughing, sneezing, or speaking. But as the experts continue to study more about this pathogen, it

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turns out that there are other ways how this is being transmitted (World Health Organization, 2020b). The virus began to spread rapidly, even having cases outside China, making the World Health Organization's Director-General declaring the outbreak a Public Health Emergency of International Concern. It spreads so fast that it became a pandemic just more than a month after the previous declaration (World Health Organization, 2020a).

As the virus continues to spread worldwide, the Philippines was not able to contain the virus outside its borders. On 30 January 2020, the Philippine Department of Health (DOH) recorded the first case of COVID-19 in the country with a Chinese national. On 7 March 2020, the first local transmission was reported (World Health Organization, 2020c). Precisely months have passed since the primary affirmed COVID-19 case was reported within the Philippines. The government executed numerous actions, including adherence to the guidelines and health protocols released by the WHO, contact tracing to immediately detect and isolate those who have close contacts with carriers, and strict community isolation in Metro Manila extending to Luzon as well as other parts of the country closing almost all establishments, such as shopping centers, hoping to contain the rapidly increasing cases within the bounds of the Philippines (World Health Organization, 2020d).

But despite these numerous actions, the country's situation seems to worsen as time goes by. Ten months after the first recorded case, the country has reported a total of 431,630 confirmed cases with total deaths of 8,392 (Elflain, 2020; Philippine Department of Health, 2020; World Health Organization, 2020e). This makes the Philippines the 2<sup>nd</sup> country in Southeast Asia with the most number of confirmed cases and ranks 27<sup>th</sup> globally (Elflain, 2020; Petterson et al., 2020; World Health Organization, 2020e). According to experts, a significant factor why COVID-19 cases persist to increase is due to faulty human behavior (Lee, 2020; Maragakis, 2020) and Filipinos are no exceptions. On 25 October 2020, Manila Bulletin released an article announcing that over 100,000 quarantine violators were arrested by the Philippine National Police (Chavez, 2020).

This shows that the success of the efforts of the government depends on people's adherence to preventive measures, which is affected by their knowledge, attitude, and practices. A study revealed that public knowledge is vital in response to outbreaks (University of Surrey, 2018), which means that public health educators are as crucial as other front liners, including student nurses.

In the Philippines, the Bachelor of Science in Nursing (BSN) is a four-year program that includes general and professional courses. Professional courses are threaded from the first year through the fourth year, emphasizing the concepts with corresponding Related Learning Experience (RLE). The BSN curriculum includes an intensive nursing practicum designed to improve nursing skills further and ensure that the BSN program results expected of an entry-level nurse are met (Commission on Higher Education,

2017). As early as in their 2<sup>nd</sup> year in the BSN program, student nurses are taught how to educate people in the community. Assessing their current awareness and knowledge about this virus and its prevention can identify gaps that affect their perceptions and responses, which they can integrate into those people in the community.

COVID-19 is a new strain of infectious virus that has had a catastrophic effect on every individual within the short time it was first detected. Thus far, only a few published articles evaluate the knowledge, attitude, and practice of nursing students towards COVID-19. The novelty of this virus, together with its precariousness and serious threats, made it hard for health professionals and authorities to plan strategic action to stop the spread of the virus. To the best of our knowledge, this is the first study to examine COVID-19 knowledge, attitude, and practice related sociodemographic characteristics among student nurses in the Philippines. Thus, this study aims to determine the knowledge, attitude, and practice towards COVID-19 among student nurses in Manila, Philippines.

## Methods

### Study Design

This study utilized a descriptive cross-sectional survey to determine the level of knowledge, attitude, and practice towards COVID-19.

### Participants

An online survey using the Likert scale was used to gather the necessary data for this study. Total enumeration of students from two Colleges of Nursing in Manila was included with a total of 314 student nurses. The inclusion criteria include: (1) nursing students studying in a college or a university, either public or private, in Metro Manila; (2) currently enrolled in the academic year 2020-2021; (3) have access to internet connection; (4) understands the English language; (5) and of legal age (18 years old and above) who can give informed consent.

### Measures

This study utilized the questionnaire developed by Al-Hanawi et al. (2020) in order to measure the knowledge, attitude, and practice towards COVID-19 among nursing students. Respondents were asked about their knowledge using the 22-item Dichotomous questions where the questions were answered by yes or no with Cronbach's alpha coefficient of 0.71. In terms of attitudes, respondents were asked to answer six attitudinal statements and scored as 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. It has a Cronbach's alpha coefficient of 0.81. In the section of practice, respondents five practice statements to be answered by "yes" or "no" were asked, and a score of one was given for answers that denote a good practice, and a score of zero was given for answers that denoted bad practice. The total score ranged from zero to five, with high scores indicating better practices. The instrument was administered using the

English language translation of [Al-Hanawi et al. \(2020\)](#). No translation was conducted since English is the medium of instruction in the BSN program in the Philippines.

### Data Collection

This study involved the use of primary data collection using a self-administered questionnaire. Prior to data gathering, the researchers got approval from the College Dean through a letter of request to conduct this study. Permission to utilize the COVID-19 knowledge, attitude, and practice instrument was secured from the developer of the tool. Further, with the Dean's approval and a clearance from the ethics board, the researchers then collected the data using Google Forms. Given the physical distancing measures and other restrictions implemented, data were collected online to avoid face-to-face interactions during the course of the collection from October 2020 to December 2020.

### Data Analysis

This study used frequency, percentage, mean, standard deviation, independent *t*-test, and one-way ANOVA to analyzed the data gathered from the respondents. The Shapiro Wilk test indicated that the data were normally distributed. The alpha level of significance was set at 0.05.

### Ethical Considerations

This study was conducted in accordance with the established ethical standards of conducting research with human participants. The researchers obtained ethical clearance from San Beda University – Research Ethics Board with Protocol Number 2020-040. It was made sure that respondents were informed regarding the study's objectives, associated risks, and benefits of participation and encouraged to ask any questions regarding the study. Written consent was also secured when the respondents decided to participate.

### Results

Table 1 shows the socio-demographic characteristics of the participants, which displays the mean knowledge score of

18.76 (*SD* = 1.64), the mean attitude score of 26.58 (*SD* = 2.71), and the mean practice score of 4.26 (*SD* = 0.93). Of the total individuals, 77 (24.5%) were males and 234 (74.5%) were females, aged between 18 and 31. More than half of them were enrolled in private schools totaling 177 (56.4%) individuals, and the majority came from Level 1 with 122 (38.9%). These participants were also categorized according to their family's monthly income in Philippine peso (Php), with 112 (35.7%) in the less than Php 20,000 bracket, 59 (18.8%) in the Php 20,000-30,000 bracket, 29 (9.2%) in the Php 30,000-40,000 bracket, 26 (8.3%) in the Php 40,000-50,000 bracket, and 88 (28%) in the more than Php 50,000 bracket. The content of the next tables, Table 2-4, shows the participants' responses about knowledge, attitude, and practice towards COVID-19.

**Table 1** Characteristics of the Participants (*N* = 314)

Variable	Mean (SD)	<i>n</i> (%)
<b>Knowledge</b>	18.76 (1.64)	
<b>Attitude</b>	26.58 (2.71)	
<b>Practice</b>	4.26 (0.93)	
<b>Age</b>	19.80 (1.54)	
<b>Gender</b>		
Male		77 (24.5)
Female		234 (74.5)
<b>Year Level</b>		
1 <sup>st</sup> year		122 (38.9)
2 <sup>nd</sup> year		86 (27.4)
3 <sup>rd</sup> year		75 (23.9)
4 <sup>th</sup> year		31 (9.9)
<b>Type of School</b>		
Public		137 (43.6)
Private		177 (56.4)
<b>Income</b>		
Less than Php20,000		112 (35.7)
Php20,000 to Php30,000		59 (18.8)
Php30,000 to Php40,000		29 (9.2)
Php40,000 to Php50,000		26 (8.3)
More than Php50,000		88 (28)

**Table 2** Level of knowledge of the participants about COVID-19

Statements	<i>n</i> (%)	
	Correct Answer	Incorrect Answer
SARS-CoV-2 spreads from person to person within close distance of each other (approx. six feet)	281 (89.5)	33 (10.5)
SARS-CoV-2 spread through respiratory droplets, which occur when infected people cough and sneeze	313 (99.7)	1 (0.3)
SARS-CoV-2 can be contracted by touching a surface or object on which the virus is attached and then touching one's mouth, nose, or, perhaps, eyes	312 (99.4)	2 (0.6)
Close contact or eating wild animals causes COVID-19	145 (46.2)	145 (46.2)
People infected with SARS-CoV-2 cannot transmit the virus to others when a fever is not present	282 (89.8)	32 (10.2)
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, myalgia, and shortness of breath	305 (97.1)	9 (2.9)
Unlike the common cold, congestion, runny nose, and sneezing are less common in people infected with SARS-CoV-2	139 (44.3)	175 (55.7)

**Table 2 (Cont.)**

Antibiotics are an effective treatment for COVID-19	247 (78.7)	67 (21.3)
Currently, there is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the diseases	302 (96.2)	12 (3.8)
Older adults and those with serious chronic illnesses, such as heart or lung disease and diabetes, are at increased risk of developing more serious complications from COVID-19	208 (98.1)	6 (1.9)
Not all people with COVID-19 have severe cases. Only older adults with chronic illnesses tend to be more severe	234 (74.5)	80 (25.5)
Pregnant women are more susceptible to infections than non-pregnant women	231 (73.6)	83 (26.4)
Children do not appear to be at higher risk for COVID-19 than adults	136 (43.3)	178 (56.70)
It is not necessary for children or young people to take precautionary measures to prevent SARS-CoV-2 transmission	252 (80.3)	62 (19.7)
After being in a public place, after nose-blowing, coughing, or sneezing, people must wash their hands with soap and water or use a hand sanitizer containing at least 60% alcohol for at least 20 seconds	287 (91.4)	27 (8.6)
People should avoid touching their eyes, nose, and mouth with unwashed hands	310 (98.7)	4 (1.3)
Ordinary residents can wear general medical masks to prevent the SARS-CoV-2 infection	291 (92.7)	23 (7.3)
People should only wear a mask if they are infected with the virus or if they are caring for someone with suspected SARS-CoV-2 infection	271 (86.3)	43 (13.7)
Healthy food and drinking water increase the body's immunity and resistance to COVID-19	307 (97.8)	7 (2.2)
Isolation and treatment of people infected with the SARS-CoV-2 are effective ways to reduce the spread of the virus	313 (99.7)	1 (0.3)
People in contact with someone infected with SARS-CoV-2 should be immediately quarantined, in an appropriate location, for a general observation period of 14 days	313 (99.7)	1 (0.3)
To prevent transmission of SARS-CoV-2, people must avoid going to crowded places and avoid taking public transport	312 (99.4)	2 (0.6)

**Table 3** Level of the attitude of the participants about COVID-19

Statement	n (%)				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It is important to keep my distance from others to avoid spreading SARS-CoV-2	0	0	0	11 (3.5)	303 (96.5)
Washing hands is essential to protect myself from COVID-19	0	0	1 (0.3)	6 (1.9)	307 (97.8)
To protect myself from COVID-19 exposure, I should stay home if I am sick unless I am receiving medical care	0	1 (0.3)	8 (2.5)	28 (8.9)	277 (88.2)
COVID-19 will eventually be successfully controlled	7 (2.2)	28 (8.9)	88 (28)	76 (24.2)	115 (36.6)
Philippines' strict measures can help win the battle against COVID-19	28 (8.9)	33 (10.5)	87 (27.7)	65 (20.7)	101 (32.2)
Compliance with the Department of Health precautions will prevent the spread of COVID-19	3 (1)	11 (3.5)	41 (13.1)	68 (21.7)	191 (60.8)

**Table 4** Practices of the participants about COVID-19

Statements	n (%)	
	Yes	No
Have you recently been to a social event involving a large number of people?	58 (18.5)	256 (81.5)
Have you recently been to a crowded place?	105 (33.4)	209 (66.6)
Have you recently avoided cultural behaviors, such as shaking hands?	265 (84.4)	49 (15.6)
Have you been practicing social distancing?	306 (97.5)	8 (2.5)
Recently, have you frequently washed your hands with soap and water, for at least 40 seconds, especially after going to a public place or after nose-blowing, coughing, or sneezing?	302 (96.2)	12 (3.8)

Table 5 shows the comparison of the characteristics of the participants with the level of knowledge, attitude, and practice. In terms of knowledge, a significant difference noted in terms of year level, with 3<sup>rd</sup> year having a higher mean score ( $M = 19.01$ ,  $F = 2.696$ ,  $p = 0.046$ ) compared to

other levels and type of school, with public university students having a higher level of knowledge ( $M = 18.97$ ,  $t = 2.070$ ,  $p = 0.039$ ) as compared to private university students.

In terms of attitude, females have higher mean scores ( $M = 26.85$ ,  $t = -2.630$ ,  $p = 0.009$  and students from public university have higher scores ( $M = 2.81$ ,  $t = -4.406$ ,  $p = 0.000$ ) than students from private university. For practice,

a significant difference was noted in terms of year level, with 3<sup>rd</sup> year students having a higher mean score ( $M = 4.42$ ,  $F = 3.180$ ,  $p = 0.024$ ) compared to other year levels.

**Table 5** Comparison of the characteristics of the participants and average of knowledge, attitude, and practice score

Variable	Knowledge score				Attitude score				Practice score			
	Mean	SD	F/t	p	Mean	SD	F/t	p	Mean	SD	F/t	p
<b>Gender</b>												
Male	18.62	1.97	-0.732	0.406	25.94	3.21	-2.630	0.009*	4.11	1.03	-1.594	0.112
Female	18.80	1.52			26.85	2.44			4.31	0.89		
<b>Year Level</b>												
1 <sup>st</sup> year	18.62	1.65	2.696	*0.046	26.55	2.66	1.447	0.229	4.22	0.89	3.180	*0.024
2 <sup>nd</sup> year	18.95	1.51			26.92	2.36			4.32	0.96		
3 <sup>rd</sup> year	19.01	1.42			26.57	2.75			4.42	0.79		
4 <sup>th</sup> year	18.16	2.22			25.74	3.54			3.83	1.21		
<b>Type of School</b>												
Public	18.97	1.64	2.070	*0.039	25.83	2.81	-4.406	0.000*	4.22	0.94	-0.704	0.482
Private	18.59	1.63			27.15	2.49			4.29	0.93		
<b>Income</b>												
Less than 20,000	18.74	1.52	0.780	0.539	27	2.52	1.396	0.235	4.33	0.96	1.327	0.260
20,000 to 30,000	18.58	1.91			26.63	2.78			4.25	0.88		
30,000 to 40,000	18.51	2.31			26.45	3.39			3.89	1.05		
40,000 to 50,000	19.11	1.42			26	3.12			4.23	0.91		
More than 50,000	18.89	1.38			26.21	2.48			4.31	0.89		

\*p-value is significant at 0.05

## Discussion

The objective of the study is to determine the significance of assessing the level of knowledge, attitude, and practice to be measured can serve as a guide (Azlan et al., 2020). These circumstances stipulate the necessity of public adherence to preventive and control measures, which is influenced by their knowledge, attitudes, and practices (Al-Hanawi et al., 2020).

The survey on 314 student nurses showed that the majority of the participants were aware of COVID-19 related knowledge, exhibit a positive attitude and dynamic practice throughout the outbreak showing the effect of massive public education campaigns, such as social media (Peng et al., 2020). Although this study shows that the participants were very much acquainted with the precautions, symptoms, and transmission of the virus, it also manifests that more than half of the participants were still convinced that having close contact or eating wild animals causes COVID-19. A total of 169 or 53.8% of the participants erroneously answered on this item. This exhibits that these participants still adhere to the claims that the virus came from bats that were ingested by people in a marketplace in Wuhan despite the fact that several reports are claiming that there may have animals that tested positive for this virus, but there is still no evidence to suggest that animals are capable of transmitting the infection to humans (Ohio State University, 2020; Centers for Disease Control and Prevention, 2021). Another significant error was 178 (56.7%) of the respondents

believe that children are at higher risk for COVID-19 compared to adults who may be due to thinking that children have a weaker immune system, but experts believe that children are not at higher risk but is equally susceptible to the virus as adults do (Beusekom, 2020).

Several factors were also incorporated to see if there would be any differences in the knowledge of participants. Among the characteristics of the respondents, the year level and the type of school appear to have a significant difference. The study revealed that third-year students have a higher mean score than other levels. This is different from other studies that show a higher level of knowledge in fourth and fifth-year students (Noreen et al., 2020). This reflects the effectiveness of the new nursing curriculum where the nursing subject for communicable diseases is now embedded in the third year, giving them more opportunities to have further information about such diseases at an earlier time. It also came to light that students from public schools have a higher mean score than students from private schools, congruent with other studies (Peng et al., 2020). This may be rooted in private schools' inferiority in terms of numbers, including quantity and quality of students and teachers, as well as support from authorities (The World Bank, 2011).

The result for assessment of the participants' attitude exhibits notable data. Although almost all of them have a positive attitude in following measures to address the spreading of the virus, 39.2% of them think that the current situation will not be controlled anytime sooner. Nearly half of them (47.1%) also think that the country's austere measures will not be able to control this pandemic. These



outcomes show a remarkable number of individuals who are not assertive in the government's movement and immediate response, including austere lockdowns, suspension of public transports, school classes, leisure activities, and implementation of a curfew in disparate cities. However, some of the participants have been pessimistic regarding this issue owing to the fact that people tend to experience negative emotions, such as panic and anxiety, throughout the time of the pandemic that could influence their attitude. Further, gender and the type of school were showed to have a significant difference. The results showed that women tend to be more optimistic and have a positive attitude towards this crisis which is also reflected in several studies (Noreen et al., 2020).

Overall, the majority of the participants abides by the control and preventive measures that the health workers along with the authorities enacted. This showed beyond doubt the eagerness of the participants to adjust and undergo behavioral changes in the face of the COVID-19 pandemic. The participants espoused good and safe practice for the reason that the government's palpable campaign towards the disease influenced the behavioral change of the individuals.

Based on our knowledge, this is the first study conducted to analyze the knowledge, attitude, and practice related to COVID-19 among student nurses in the Philippines. For that reason, it offers valuable information about public health education and prevention in Philippine universities during the COVID-19 pandemic. Our findings show that most Filipino undergraduate students have a basic understanding of COVID-19, though their performance varies by school type and year level. There is a difference based on gender and type of school based on the attitude towards COVID-19. These findings indicate that gender, year level, and type of school can influence students' responses to the COVID-19 outbreak and acquisition of public health education, which should be brought to the attention of educators and health officials. These factors should also be considered when developing contingency plans or preparation for students in the event of potential public health emergencies.

## Conclusion

The current study was able to lay out an extensive exploration concerning the knowledge, attitude, and practice of the student nurses in the Philippines towards COVID-19. Knowledge about COVID-19 is pondered to be the first step in overcoming infectious disease. In addition, being educated about its basic information, such as its transmission and causes, increased the possibility of people being mindful of the spread of communicable diseases. The outcome proves that Filipino student nurses have a justifiable level of knowledge in the said disease and are mainly optimistic in their perspective in controlling the pandemic. Nevertheless, having constant reminder from the authorities and health care professionals are the

solution to aid public knowledge and comprehension relating to COVID-19.

## Declaration of Conflicting Interest

The authors have no conflict of interest to disclose.

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## Author Contribution

All the authors have made a substantial contribution from conception to the finalization of this study. EZQ was involved in the conception of the study, data collection, and revising the article for important intellectual content. RRT was involved in the conception of the study, the collection of data, and editing the article for important intellectual content. GPS was in charge of the conception and design of the study, analysis and interpretation of data, and revising the article for important intellectual content. All authors approved the final version of the article.

## Author Biographies

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## Data Availability Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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