



## Knowledge, Attitudes and Behavior of Nursing Students Towards the Covid-19 Pandemic In Indonesia

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### ABSTRACT

Coronavirus disease 2019 (COVID-19) is an emerging respiratory disease caused by the new coronavirus and was first detected in December 2019 in Wuhan, China. As a prospective nurse professional who will engage with patients or partners for counseling about pregnancy decision-making and provide health education. During this pandemic period, there was no research that identified the knowledge, attitudes and behavior of students towards the 2019 coronavirus in Indonesia. The purpose of this study is to find out the description of the knowledge, attitudes, and behavior of nursing students against COVID-19 in Indonesia. This cross-sectional survey was conducted from May June 2020. The data was collected online by relying on the writer's network with nursing lecturers in Indonesia and posting to several groups on social media. The inclusion criteria were (i) being a nursing student with Indonesian nationality; (ii) acknowledges the consent given prior to the completion of the survey. A developed questionnaire of knowledge, attitudes and practices towards COVID-19 was used. The majority of participants included in the study (> 80%) had a high level of caution regarding droplets and air isolation during the COVID-19 outbreak which indicates that most participants had a positive attitude towards COVID-19. More than 80% of participants agreed that COVID-19 will finally be brought under control and belief that Indonesia can win the battle against the COVID-19. This study can be used as a reference in developing policies for nursing institutions during the 2019 coronavirus pandemic in Indonesia.

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## Pengetahuan, Sikap, Dan Perilaku Mahasiswa Keperawatan Terhadap Virus Corona 2019 Di Indonesia

### ABSTRACT

Coronavirus 2019 (COVID-19) adalah penyakit pernapasan yang muncul akibat virus corona baru dan pertama kali terdeteksi pada Desember 2019 di Wuhan, China. Sebagai calon perawat profesional yang akan terlibat dengan pasien atau mitra untuk konseling tentang pengambilan keputusan kehamilan dan memberikan pendidikan kesehatan. Selama periode pandemi ini, belum ada penelitian yang mengidentifikasi pengetahuan, sikap dan perilaku mahasiswa terhadap virus corona 2019 di Indonesia. Tujuan penelitian ini adalah untuk mengetahui gambaran pengetahuan, sikap, dan perilaku mahasiswa keperawatan terhadap COVID-19 di Indonesia. Survei cross-sectional ini dilakukan pada Mei-Juni 2020. Pengumpulan data dilakukan secara online dengan mengandalkan jejaring penulis dengan dosen keperawatan di Indonesia dan diposkan ke beberapa kelompok di media sosial. Kriteria inklusi adalah (i) menjadi mahasiswi keperawatan berkebangsaan Indonesia; (ii) mengakui persetujuan yang diberikan sebelum survei selesai. Kuesioner pengetahuan, sikap dan praktik yang dikembangkan terhadap COVID-19 digunakan. Mayoritas peserta yang

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termasuk dalam penelitian (> 80%) memiliki tingkat kewaspadaan yang tinggi terkait tetapan dan isolasi udara selama wabah COVID-19 yang menunjukkan bahwa sebagian besar peserta memiliki sikap positif terhadap COVID-19. Lebih dari 80% peserta setuju bahwa COVID-19 pada akhirnya akan dikendalikan dan diyakini bahwa Indonesia dapat memenangkan pertempuran melawan COVID-19. Kajian ini dapat dijadikan acuan dalam menyusun kebijakan institusi keperawatan pada saat pandemi virus corona 2019 di Indonesia.



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## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an emerging respiratory disease caused by the new coronavirus and was first detected in December 2019 in Wuhan, China. It is highly contagious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia and dyspnea. In China, 18.5% of patients with COVID-19 progress to a severe stage characterized by acute respiratory distress syndrome, septic shock, intractable metabolic acidosis, and bleeding and coagulation dysfunction (The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team, 2020). Empirical clinical data show that the overall case fatality rate for COVID-19 is 2.3% in China, significantly lower than SARS (9.5%), MERS (34.4%), and H7N9 (39.0%) (Chen et al. 2020; Munster et al. 2020; WHO 2020).

The ongoing COVID-19 epidemic has spread at an extremely fast pace, and as of February 15, 2020, the virus has reached 26 countries in total, resulting in 51,857 laboratory confirmed infections and 1669 deaths, with nearly all infections and deaths occurring in China (WHO 2020). In response to this serious situation, the World Health Organization (WHO) declared it a public health emergency of international concern on January 30 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19 (WHO 2020). In Indonesia, as of 12 April 2020, the Government of the Republic of Indonesia has reported 4,241 confirmed cases in at least 17 provinces and 373 deaths related to 2019 -nCoV, while 359 patients have recovered from the disease. The Ministry of Health of the Republic of Indonesia (MoH) has taken action to step up response efforts for 2019-nCoV, responding to initial guidelines from WHO on the new coronavirus. Since 17 March 2020, the Government of Indonesia has issued a policy for all institutions to work and learn from home to control 2019-nCoV transmission.

Nursing is an integral part of health services which is the first line of health services (ANA, 1980). In Indonesia, nursing education is currently experiencing rapid development, marked by an increase in nursing education providers, an increase in graduate nursing graduates and an increase in the quality of nursing lecturer education levels (APNI, 2015). Nursing education is different from other scientific education, where students are not only required to have accurate knowledge but also have the skills to apply their knowledge through nursing actions, so that practicum becomes an important part of nursing education (Flood and Commendador 2016).

Knowledge, attitudes and practices (KAP) of corona virus-2019 including information and communication, knowledge, causes and symptoms, prevention, care and seeking care, risks (WHO, 2016a) As a prospective professional nurse who will engage with patients or partners for counseling about pregnancy decision-making and providing health education

(Gerdtts et al. 2016; Gundacker and Rodriguez 2016). Maintaining adequate knowledge, attitudes, and practices for nursing students is very important in both endemic and non-endemic fields (Harapan et al. 2017; Zammarchi, Spinicci, and Bartoloni 2016). Their lack of knowledge will contribute significantly to their attitudes towards disease and has the potential to affect the quality of future patient care (Ali et al. 2017). During this pandemic period, there was no research that identified the knowledge, attitudes and behavior of students towards the 2019 corona virus in Indonesia. Identifying knowledge, attitudes and practices towards the corona virus in nursing students is very important as input in policy making in this pandemic, especially for nursing institutions in Indonesia. The purpose of this study was to describe the knowledge, attitudes and behavior of nursing students towards the 2019 corona virus in Indonesia.

## METHOD

### *Research design*

This cross-sectional survey was conducted from May-June 2020. The data was collected online because it was not possible to conduct a national community-based sampling survey during this pandemic period. The online survey was conducted by relying on the writer's network with nursing lecturers in Indonesia and posting to several groups on social media. Ethical permission to conduct research will be processed before data collection. Participants must answer yes-no questions to confirm their willingness to participate voluntarily. After confirming the questions, participants were directed to complete the survey independently. The time of this research was conducted from April to May 2020.

### *Sample*

The sample in this study were nursing students in Indonesia. The inclusion criteria were (i) being a nursing student with Indonesian nationality; (ii) acknowledges the consent given prior to the completion of the survey. Participation is anonymous, and voluntary. The sampling technique was carried out by convenience sampling. The number of samples recruited is around 1000 students throughout Indonesia.

### *Instrument*

The questionnaire consisted of two parts: demographics and KAP. Demographic variables include age, gender, marital status, education, occupation, and current residence.

The COVID-19 knowledge questionnaire was developed by Zhong (2020). The questionnaire has 12 questions (Table 1): 4 regarding clinical presentation (K1-K4), 3 regarding

transmission routes (K5-K7), and 5 regarding prevention and control (K8-K12) of COVID-19. These questions are answered correctly / incorrectly with an additional "I don't know" option. Correct answer is given 1 point and wrong / unknown answer is given 0 points. The total knowledge score ranges from 0 to 12, with higher scores indicating better COVID-19 knowledge. The Cronbach alpha coefficient of the knowledge questionnaire was 0.71 in our sample, indicating acceptable internal consistency (Zhong et al. 2020).

Attitudes towards COVID-19 were measured by 2 questions regarding agreement on the ultimate control of COVID-19 and confidence in winning the battle against COVID-19. The respondent's practice assessment consisted of 2 behaviors: going to a crowded place and wearing a mask when going out in the last few days.

#### Data collection procedure

The research was conducted after obtaining permission and recommendations from the Chairperson of Universitas Sultan Ageng Tirtayasa Program Diploma 3 in Nursing and the Head of the Serang City Health Office, where the researcher conducted the research. Ethical clearance was obtained from KEPK STIKep PPNI Jawa Barat. As an ethical consideration, the researcher ensures that respondents are protected by fulfilling ethical principles (Polit & Hungler, 2006). Anonymous data is collected during the entire google process. Data is stored on separate servers that only the data manager can access. The data is converted using a codebook. After the data collection step, the data is exported, extracted.

#### Data analysis

The frequency with which answers to correct knowledge and various attitudes and practices are explained. Scores of knowledge and attitudes and practices of different people according to demographic characteristics were compared by independent sample t test, one-way analysis of variance (ANOVA), or the appropriate Chi-square test. Multivariable linear regression analysis using all demographic variables as independent variables and knowledge scores as outcome variables was performed to identify the factors associated with knowledge. Similarly, binary logistic regression analysis was used to identify factors associated with attitudes and practices. The factors were selected by stepwise backwards. Nonstandard regression coefficient (B) and odds ratio (OR) and 95% confidence interval (CI) were used to measure the relationship between variables and KAP. Data analysis was performed using SPSS version 17.0. The level of statistical significance was set at  $p < 0.05$  (two-sided).

## RESULTS

The response rate was 91.7%; There were no significant differences between respondents and non-respondents in terms of education level ( $p = 0.4$ ), gender ( $p = 0.3$ ), and mean age ( $p = 0.5$ ). The majority were women (98.6%), aged 18-19 years (mean  $\pm$  SD,  $19.736 \pm 1.61$  years), and the majority were diploma III programs. Many of them get their information from the internet (69%). D3 students are easier than S1 (Table 1).

**Tabel 1**  
**Demographic characteristics by type of student (n=362)**

Variables	Total n=362 (%)	Nursing Diploma n=324 (%)	Undergraduate Nursing n=38 (%)	p-value
Age, year (Mean $\pm$ SD)	19.73 $\pm$ 1.61	19.55 $\pm$ 1.536	21.24 $\pm$ 1.515	0.007
Range	(18-29)	(18-29)	(19-28)	
Gender				0.261
Male	5 (1.4)	0 (0)	5 (13.2)	
Female	357 (98.6)	324 (100)	33 (86.8)	
Information				0.750
Television	113 (31)	101 (17)	12 (32)	
Internet	249 (69)	223 (87)	26 (68)	
Institution				0.001
STIKep PPNI	58 (16)	37 (11)	21 (55)	
Universitas Sultan Ageng Tirtayasa	271 (75)	266 (82)	5 (13)	
Universitas Pendidikan Indonesia	33 (9)	21 (7)	12 (32)	
Residence				0.261
West Java	113 (31)	75 (23)	38 (100)	
DKI Jakarta	8 (2)	8 (3)	0	
Banten	238 (66)	235 (73)	0	
Lampung	2 (1)	2 (1)	0	
South Sumatera	1	1	0	

The total score of student knowledge was 8.66 (6-12), this shows that the attitude of students towards droplets and airborne precautions during the COVID-19 outbreak was positive. There was no statistically significant difference in the total knowledge score between D3 and S1 students ( $p = 0.586$ ). While the total score of student attitudes is 9.47 (0-12), this shows that the attitude of students towards droplets and airborne precautions during the COVID-19 outbreak is

good. There was no statistically significant difference in the total score of attitudes between D3 and S1 students ( $p = 0.330$ ). The total score for the student package was 1.32 (1-2), this shows that the practice of students against droplets and airborne precautions during the COVID-19 outbreak was positive. There was no statistically significant difference in the total score of attitudes between D3 and S1 students ( $p = 0.590$ ).

**Table 2**  
**Comparison of Knowledge, attitude and practice Nursing student knowledge of the covid 19 in Indonesia among student (n=362)**

Variable	Undergraduate Nursing Mean $\pm$ SD	Nursing Diploma Mean $\pm$ SD	p- Value
Knowledge	8.66 $\pm$ 1.40	8.81 $\pm$ 1.378	0.586
Range	(6-12)	(4-11)	
Attitude	1.47 $\pm$ 0.39	1.91 $\pm$ 0.281	0.330
Range	(0-2)	(1-2)	
Practice	1.32 $\pm$ 0.481	1.32 $\pm$ 0.669	0.590
Range	(1-2)	(0-10)	

In this survey, more than 80% of D3 and S1 students answered correctly that the main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia. The difference with colds, nasal congestion, runny nose and sneezing are less common in people infected with COVID-19. About 78-80% answered correctly that there is currently no

effective cure for COVID-19 but symptomatic treatment and early support can help most patients recover from infection. About 87% -89% answered correctly that hospital wards should be informed before admitting to patients who need drip and drip prevention (Table 3).

**Table 3**  
**Nursing student knowledge of the covid 19 in Indonesia among student (n=362)**

Items	Number of Correct Answer	
	Nursing Diploma	Undergraduate Nursing
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough and myalgia.	83%	97.4%
In contrast to the cold, nasal congestion, colds and sneezing are less common in people infected with the COVID-19	81%	78.9%
There is currently no effective cure for COVID-19 but early symptomatic and supportive treatment can help most patient recover from infection	87%	89.5%
Not everyone with COVID-19 will develop a severe case. Only the elderly have chronic disease and obesity is more likely to become a severe case.	75.6 %	86.8%
Eating or contacting wild animals will result in infection with the COVID-19.	65.1 %	36.8%
People with COVID-19 cannot infect other people when there is no fever.	43.8 %	21.1%
The COVID-19 spreads through the respiratory droplets of an infected person.	91 %	81.6%
Ordinary residents can use general medical masks to prevent infection by the COVID-19.	75.3%	65.8%
There is no need for children and adolescents to take steps to prevent infection by the COVID-19	17.9%	7.9%
To prevent infection by COVID-19 individuals should avoid going to crowded places such as train stations and avoid taking public transportation.	72.8%	97.4%
Isolation and treatment of people infected with the COVID-19 is an effective way to reduce the spread of the virus.	99.7%	100%
People who have contact with someone infected with the COVID-19 must be immediately isolated in the right place, in general the observation period is 14 days.	99.7%	100%

Regarding attitudes, around 89% -96% of both D3 and S1 students agree that COVID-19 can finally be controlled and

are confident that Indonesia can win the battle against COVID-19 (Table 4).

**Table 4**  
**Nursing student attitude of the covid 19 in Indonesia among student (n=362)**

Items	Number of agreed answer	
	Nursing Diploma	Undergraduate Nursing
Do you agree that COVID-19 will finally be brought under control?	95.1%	94.7%
Do you have the belief that indonesia can win the battle against the COVID-19?	96.6%	89.5%

The practice of nursing students in preventing COVID-19 in not avoiding crowded places is still low, only around 30%,

while the use of masks is almost 100% (Table 5).

**Table 5**  
**Nursing student practice of the covid 19 in Indonesia among student (n=362)**

Items	Number of yes answer	
	Nursing Diploma	Undergraduate Nursing
In the last few days, have you been to a crowded pace?	30.2%	34.2%
In the last few days, have you worn a mask when you left the house?	99.4%	100%

In the multivariable analysis, we found that, after adjusting for all cofounders in the final model, age (Odds (SE): -0.074 (0.555),  $p=0.007$ ), institution (Odds (SE), 0.239 (0.069),  $p = 0.001$ ), and attitude (Odds (SE): 1.059 (0.114),  $p=0.002$ ) were

the factors associated with practice towards droplet and universal airborne precautions during the COVID-19 outbreak. -19 (Table 6).

**Table 6.**  
**Multiple regression of factors associated with practice nursing student of the covid 19 in Indonesia among student (n=362)**

Variable	Odds (SE)	95% CI	p-value
Age (year)	-0.074 (0.555)	1.725 – (3.863)	0.007
Gender (male vs female)	0.331 (0.295)	-.0.247 – 0.908	0.261
Information (televisi vs internet)	0.024 (0.074)	-0.122 – 0.169	0.750
Institusi	0.239 (0.069)	0.104 – 0.375	0.001
Resident	0.331 (0.294)	-0.247 – 0.908	0.261
Knowledge	0.12 (0.24)	0.58 – 0.35	0.630
Attitude	1.059 (0.114)	0.283 – 1.165	0.002

## DISCUSSION

The majority of participants included in the study had a high level of caution regarding droplets and air isolation during the COVID-19 outbreak which indicates that most participants had a positive attitude towards COVID-19. More than 80% participants agreed that COVID-19 will finally be brought under control and belief that indonesia can win the battle against the COVID-19. Meanwhile, the practice of nursing students against droplets and airborne universal precautions during the COVID-19 outbreak was somehow problems. In addition, they wear masks when left the house but still engage in activity involve many people. Attitudes and practices of COVID-19 prevention and control are important for maintaining safety and learning later when being a nurse in giving the best quality of service by caring for patients and protecting themselves from COVID-19 infection.

Despite their good practices against droplets and airborne prevention during the COVID-19 outbreak, very few are not crowding. Many students have a high perception of the risk of contracting COVID-19. Considering that students cannot practice self-isolation; they are also at greater risk of catching COVID-19 and possibly spreading the infection to their patients. The availability of personal protective equipment in some area is a major issue as supply problems correlate with the development of disease outbreaks. Our findings point to the need for a comprehensive health education and policy plan aimed at increasing the awareness of future health workers to defend and protect themselves as well as people from infection.

Attitude ratings are substantially linked to practice ratings. Nursing student with a good mindset is engaged in further dripping and air insulation precautions during the outbreak of COVID-19. Previous research indicated that attitudes are related to practice, indicating that health care workers with higher attitude scores are more likely to

practice SARS-CoV-2 prevention (Papagiannis, 2020). Previous research has reported mixed results on the behaviors and procedures of health workers to Ebola and Zika viruses. Oladimeji et al., in particular, have expressed a good understanding of the Ebola virus, but without a degree of good practice among Nigerian health workers. Attitude and experience surveys are commonly used to detect personality variations and patterns that can help execute effective strategies. Our study was performed early in the epidemic of the disease and can thus help to set priorities for a global public health plan to handle the most dangerous and unsafe practices. Factors that can affect attitudes and practices towards COVID-19 need to be fully understood and identified.

## STUDY LIMITTAION

There are a lot of drawbacks to our research. We agree that the nature of the study does not favor the geographical sample of participants. Convenience sampling has limitations on population bias, which can restrict the interpretation of the results of the target sample. In addition, this research offers a questionnaire-based analysis and thus there is a potential for bias in depth. Another possible limitation in our sample could be that the gender of the respondents is overwhelmingly female.

## CONCLUSION

Our research highlights the optimistic attitudes and best practices of nursing students towards prevention of droplets and airborne precautions during the outbreak of COVID-19. Tailor-made educational programs and targeted monitoring



in order to perform and sustain nursing practices should be compulsory.

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