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Knowledge, attitudes, and practices of Indonesian medical and non-medical undergraduate students toward COVID-19

Thania Lathifatunnisa Putri Agusti[1], Nahwa Arkhaesi[2], Anugrah Riansari[3], Rebriarina Hapsari[4]
[1]School of Medicine, Universitas Diponegoro, Semarang, Indonesia
[2]Department of Pediatrics, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia
[3]Department of Parasitology, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia
[4]Department of Microbiology, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia

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ABSTRACT

As the coronavirus disease 2019 (COVID-19) pandemic spread across Indonesia, good knowledge, proper attitude, and appropriate practices among undergraduate students must be achieved before starting a face-to-face lecture. These are also important since most students are active in social media and can spread true or false rumors regarding COVID-19. This study aimed to assess the level of knowledge, attitudes, and practices of medical and non-medical undergraduate students toward COVID-19. A 51-item online questionnaire was developed and sent to random undergraduate students from different faculties in Universitas Diponegoro, Indonesia. A total of 482 students completed the survey. The Chi-square test showed significant associations in the level of knowledge, attitudes, and practices towards the COVID-19 between medical and non-medical students, where medical students have better knowledge, attitudes, and practices than non-medical students. This study's findings may become the basis for an awareness campaign planning among students in particular and the public in general, which at this time most student activities are still carried out online and to prepare face-to-face lectures and also to deepen the material regarding COVID-19 among students, especially non-medical students, and furthermore, help to guide the efforts and plans of state health authorities for better containment of COVID-19.

Corresponding Author:

Rebriarina Hapsari
Department of Microbiology, Faculty of Medicine, Universitas Diponegoro
Jalan Professor Soedarto, Tembalang, Semarang 50275, Central Java, Indonesia
Email: r.hapsari@fk.undip.ac.id

1. INTRODUCTION

The coronavirus emerges as a serious health threat for humans and animal [1]. On December 31, 2019, the World Health Organization (WHO) China Country Office reported a pneumonia case with unknown etiology in Wuhan City, Hubei Province, China. In three days, the cases were reported for 44 patients and increased to million cases today [2]. On January 30, 2020, WHO stated the Public Health Emergency of International Concern (KKMMD/PHEIC), an emergency and health threat for other countries [3]. Then, on February 11, 2020, WHO named the new virus Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) [4], [5]. The initial report on January 2, 2020 with a male patient distribution of 73%; 32% of the patients had comorbidities such as diabetes, hypertension, and heart diseases, and 66% of the total patient was exposed or related to one of the seafood markets in Wuhan, *i.e.*, Huanan Seafood Market [6], [7]. The worldwide case total per March 25, 2020, increased to 413,467 with death cases of 18,433

people. Southeast Asia reached 2,344 cases with a death toll of 72 people, where Indonesia had 686 cases with total death of 55 people [8]. As a Public Health Emergency of International Concern, WHO strives to prevent and reduce the COVID-19 transmission by preparation, measure, and prevention guidelines such as alertness, readiness, and critical response measures for COVID-19; coordination, planning, and supervision of country levels; surveillance, quick response team, and case investigation team; and other prevention measures such as providing guidebook regarding public places, *e.g.,* schools, workplaces, and institutions [9], [10]. Social distancing establishment and delays in education and workplace opening unimaginably affect all education stakeholders [11]. One of them is students that represent a crucial group in the education field. University students define as a special and important group, such as social control, moral force, iron stock, agent of change, and direct of change. Furthermore, university students are among the most active members of various social media platforms. Their perceptions and behaviors could have a massive impact on the spread of a pandemic [12]. The viral outbreak public more adheres towards the preventive measure which is highly reflected by their knowledge, attitude, and practice.

The Indonesian government is also working to issue a health protocol for COVID-19, one of which is calling on the public to carry out social distancing or physical distancing [13]. Social distancing means staying away from crowds, working, studying, and worshiping at home, minimizing touching, and being close to other people. Physical distancing and delays in opening educational institutions impact all education stakeholders in an unprecedented way [14]. Therefore, it is essential to evaluate their understanding of the COVID-19 pandemic.

It is necessary to concern knowledge and attitude that underlies practice against the COVID-19 pandemic. This research aimed to illustrate the knowledge level and attitude that underly practice regarding diseases, transmission patterns, associated terms, and prevention measures against the COVID-19 pandemic on medical students and non-medical students in Indonesia. The students are playing an active role in conveying the information to the masses.

2. METHOD

This study was an analytic observational test using a cross-sectional study. The study was conducted from July 22-29, 2020, with inclusion and exclusion criteria. The study's inclusion criteria were: i) active pre-clinical and clinical students of the general medicine Department at the Universitas Diponegoro, ii) active students of Nursing, Dentistry, Pharmacy, and Nutritional Science departments at the Universitas Diponegoro, iii) active non-medical students at the Universitas Diponegoro, iv) students who are willing to participate in the study, v) students fulfilling the questionnaire ultimately, vi) students with internet access. The study's exclusion criteria were: i) clinical students' class 2014 of general medicine Department. Equipment and materials utilized in the study were a questionnaire comprised of four parts, (i) demographics, which surveyed participants' socio-demographic information including age, gender, batch year, faculty or department, family in health worker fields, closest people diagnosed with COVID-19, (ii) knowledge about COVID-19 (K1—K30), (iii) attitudes toward COVID-19 (A1—A11), (iv) practices relevant to COVID-19 (P1—P10), all of the questions provided online through Google form. All questions and statements are presented with yes, or no answers, which are then based on the results of the total respondents categorized in percent, and the number of correct answers and good vs. bad cut-offs were determined based on statistical results in the form of the mean of each variable category.

In this study, before analyzing data, data editing was performed. The data obtained were investigated for their completeness and errors, and then put into tables in a computer file, Microsoft Excel. The analysis was carried out using SPSS Version 23. The univariate analysis aimed to obtain the frequency distribution. The bivariate analysis used the Chi-square test. The Chi-square test was employed to compare proportional differences of each category variable. The degree of independent variable influence on dependent variables was assessed using the odd ratio (OR) value. The confidence interval utilized was 95% (95% CI). The Chi-square test was carried out to find differences in groups (good vs. bad) based on the educational level variable of medical and non-medical backgrounds. The p-values below 0.05 were considered significant in all tests.

The study's sampling method was consecutive sampling. The sample size was obtained based on the categorical-analytical sampling formula for cross-sectional studies with minimal needed on each group in the number of 96 people with total samples were 192 people. The validity of the tool was done using the expert opinion method. The questionnaire was tested by three experts from the Microbiology Department and Pediatric Department of Medical Faculty at the Universitas Diponegoro. Reliability test was assessed by pre-testing on 10% of the similar sample; data was collected, cleaned for missing variables, and cross-validated by random checking. Data on the sample that has been used for reliability testing were excluded from the research data. Data was entered in SPSS version 23, where categorical variables were summarized by

frequencies and percentages. The study was carried out on medical and non-medical students at the Universitas Diponegoro, Semarang, Indonesia, who fulfilled the inclusion and exclusion criteria and provided online messages and posters containing information. The study was carried out after the informed consent fulfillment and online questionnaire sheet provision through Google form on bit.ly/KTI-COVID-19. Then, the data processing was conducted from online questionnaires completed by study samples. The study was carried out after acquiring permission from the Medical Study Ethics Committee of Medical Faculty Universitas Diponegoro Semarang with ethical clearance 158/EC/KEPK/FK-UNDIP/VII/2020. Data were collected by distributing the questionnaire to study respondents who were selected and willing to participate in the study by completing the "Participation Willingness Form" on the questionnaire's first page. Respondents were previously informed briefly regarding the study. Then, respondents completed all questions on the next page. Respondent participation was voluntary. Subject identities will not be published without their consent. All costs related to the study were incurred by the researchers.

3. RESULTS AND DISCUSSION

3.1. Study respondent characteristics

Universitas Diponegoro has 11 faculties: Medical Faculty, Law Faculty, Psychology Faculty, Public Health Faculty (FKM), Engineering Faculty, Animal Husbandry and Agriculture Faculty (FPP), Economy and Business Faculty (FEB), Social and Political Science Faculty (FISIP), Science and Mathematics Faculty (FSM), Fishery and Marine Science Faculty (FPIK), Cultural Science Faculty (FIB), and one vocational school. The Medical Faculty consists of five departments, *i.e.*, General Medical Department, Dentistry Department, Nursing Department, Nutritional Science Department, and the Pharmacy Department. The General Medical Department has two stages, *i.e.*, pre-clinic and clinic. The study results were primary data obtained from questionnaire completion by study respondents to obtain information concerning knowledge, attitudes, and practices of medical and non-medical students regarding the COVID-19 pandemic. The study involved a total of 482 respondents of Universitas Diponegoro's students divided into two groups, *i.e.*, medical students (n=267) and non-medical students (n=215).

As shown in Table 1, it is discovered that respondent ages were between 17-20 years, with the majority was 20 years (31.7%), followed by 21 years (29.9%), 19 years (19.7%), 22 years (9.8%), 23 years (3.7%), 18 years (4.6%), 24 years (0.4%), and 17 years (0.2%). Male respondents amounted to 133 (27.6%), and females were 349 (72.4%). The majority of respondents from the batch year was class 2017 for 216 (44.8%), followed by class 2019 for 95 (19.7%), then class 2018 for 94 (19.5%), and class 2016 and 2015 for 53 (11%) and 24 (5%). The total medical respondents were 267 (55.4%), and non-medical respondents were 215 (44.6%).

Based on the results of the analysis in Table 2, the results were obtained from 267 respondents with an educational background in the form of medicine, most of whom have families in the field of health workers (64.2%). Respondents with non-medical educational backgrounds mostly do not have families in the field of health personnel. There were significant associations, with $p<0.001$, regarding the differences between respondents and relatives/family members who have professions in health personnel based on the education group's background. The following is the knowledge, attitude, and practice difference illustration based on educational groups. This research, with a total of 482 students, consists of two educational backgrounds, medical and non-medical students with two categories of good and bad knowledge groups, students who have good vs. bad attitudes, and good vs. bad behavior, it can be seen in Table 3. All questions and statements are presented with yes or no answers, which are then based on the results of the total respondents categorized in percent, and the number of correct answers and good vs. bad cut-offs were determined based on statistical results in the form of the mean of each variable category.

Based on the study results in Table 4 and Table 5, the study demonstrates that medical students had better knowledge than non-medical students, with a significant association of ($p<0.001$). This study follows the predecessor study regarding knowledge, attitude, and practice of Indonesian undergraduate students in medical and non-medical student groups with a significance of $p<0.001$ [15]. The items with no p-value were answered all questions correctly by the students. There was a knowledge level difference between medical and non-medical students, where medical students had better knowledge. The study results are also in line with a study in China concerning undergraduate student knowledge on COVID-19. There was a statistically significant association between the two medical and non-medical student groups ($p=0.025$) [11]. However, a study in Jordan regarding knowledge, attitude, and practice of medical and non-medical students on the COVID-19 pandemic had a contrasting result where no statistically significant result was found in two medical and non-medical student groups ($p=0.519$) [16]. The significant association between the two educational groups can be caused by medical students' training in clinical medicine and public health fields.

Medical students have the obligation and responsibility to fight this pandemic as the guideline that in the future they will be professional medical workers; it is considered to encourage the provision of good

knowledge during the public health emergency condition. Table 4 also shows that attitude differences, based on educational groups, illustrated attitudes regarding the COVID-19 pandemic. Medical students had better practice than non-medical students, and there was a statistically significant result (p<0.001). The study results are in line with the previous study regarding undergraduate students' practice in Indonesia related to COVID-19, which had a statistically significant result (p<0.001) [16]. However, this study had different results from the research on the practice of medical students compared to non-medical students related to COVID-19 in Jordan, where there was no significant association between the two comparison groups (p=0.521) [16].

Table 1. Distribution of study respondent characteristics

Variable		Frequency (n)	Percentage (%)
Age (year)	17	1	0.2
	18	22	4.6
	19	95	19.7
	20	153	31.7
	21	144	29.9
	22	47	9.8
	23	18	3.7
	24	2	0.4
Gender	Male	133	27.6
	Female	349	72.4
Batch year	2015	24	5
	2016	53	11
	2017	216	44.8
	2018	94	19.5
	2019	95	19.7
Faculty or Department	General medicine	199	41.3
	Dentistry	18	3.7
	Nursing	20	4.1
	Nutritional sciences	21	4.4
	Pharmacy	9	1.9
	Law	13	2.7
	Psychology	13	2.7
	Public health	20	4.1
	Engineering	64	13.3
	FPP	8	1.7
	FEB	28	5.8
	FISIP	15	3.1
	FSM	33	6.8
	FPIK	8	1.7
	FIB	13	2.7
Total	Medical	267	55.4
	Non-medical	215	44.6

Table 2. Characteristics of respondents

Characteristic variable		Education				p
		Medical (267)		Non-medical (215)		
		n	%	n	%	
Family in health worker fields	Yes	156	64.2	87	35.8	<0.001*
	No	111	46.4	128	53.6	
The closest people are diagnosed with COVID-19	Yes	33	48.5	35	51.5	0.219
	No	234	56.5	180	43.5	

Table 3. Knowledge, attitude, and practice of students

Variable	n	%	Mean±SD	Median (min-max)
Educational groups				
Medical	267	55.4		
Non-medical	215	44.6		
Knowledge				
Good	278	57.7	27.63±1.93	28(21-30)
Bad	204	42.3		
Attitude				
Good	388	80.5	10.76±0.54	11(8-11)
Bad	94	19.5		
Practice				
Good	346	71.8	7.17±1.42	7(2-10)
Bad	136	28.2		

Table 4. Knowledge, attitude, and practices' (KAP) differences based on educational groups

Education	Knowledge		Attitude		Practices	
	Good	Bad	Good	Bad	Good	Bad
Medical	197 (73.8%)	70 (26.2%)	225 (84.3%)	42 (15.7%)	216 (80.9%)	51 (19.1%)
Non-medical	81 (37.7%)	134 (62.3%)	163 (75.8%)	52 (24.2%)	130 (60.5%)	85 (39.5%)

Table 5. Value of P, OR, and 95% CI of the KAP

KAP	P	OR	95% CI
Knowledge	<0.001*	4.656	1.838–4.171
Attitude	0.020*	1.709	1.086–2.691
Practice	<0.001*	2.769	1.838–4.171

3.2. Knowledge of the COVID-19 pandemic

Knowledge of the COVID-19 pandemic is student ability in understanding the COVID-19 etiology, pandemic status, disaster and national emergency status, signs and symptoms of susceptible groups, prevention and management, and specifically undiscovered and commercially unutilized antivirus. As well as the definition and transmission of droplets, COVID-19 transmission prevention such as avoiding crowds and performing isolation or quarantine, mask allocation and usage, prevention with handwashing, and COVID-19 management path and terms [17]. The following are the study results of the complete distribution of the knowledge column questionnaire by 482 respondents with assessment and meaningful scores.

Based on the results in Table 6, it is discovered that medical students had better knowledge than non-medical students regarding COVID-19 symptoms such as fatigue or exhaustion and dyspnea. Another statement concerning the COVID-19 infection is where most infected people do not show symptoms, and people diagnosed without symptoms cannot transmit the virus to others. Student knowledge level, particularly medical students, on COVID-19 regarding susceptible people or people with comorbidities such as diabetes mellitus, hypertension, and heart diseases, was better than non-medical students [18], [19]. The education aims so that medical and non-medical students can understand COVID-19 better to perform transmission prevention measures, early detection on COVID-19, and become the educator for surrounding communities. On the other hand, vaccination is one of the effective transmitted disease prevention measures, given that the COVID-19 specific medication remains undiscovered to date, and the management is limited to symptomatic medications [20]–[23].

As shown in Figure 1, the different level of knowledge is affected by education achieved by respondents. There were two respondent groups, i.e., medical and non-medical students. Moreover, another potentially differing factors in information sources regarding COVID-19 is social media where has been the most popular source of information that provides information about COVID-19. This is in line with research that mentioned the distribution of results in which most respondents get information from social media, then the TV, the internet afterward. The research showed that the students could take information from social media due to the times where social media is a platform that can be reached easily with various kinds of information in it. The development of technology of social media is a dynamic technology, and various advantages attracted its users. Nonetheless, the use of social media also risks the emergence of misinformation as the misused words by the meaning, hyperbole language used in this source; thus, to find accurate online information become a hindrance that is impacted by students [24]. Hence, it is clear that the advance of the digital era, where there is no barrier in obtaining information, demands specific literacy skills of students so that they can control and utilize the information provided, including COVID-19 related information [24], [25].

3.3. Attitude on the COVID-19 pandemic

The attitude in question is formed from experience through the learning process, thereby increasing individual knowledge of the object of attitude, is obtained through interaction with personal experiences, influence from others considered important, cultural influences, mass media, educational institutions, and emotional influences. The attitude regarding the COVID-19 pandemic is about awareness of status and sense of emergency, education on the transmission. Each individual must continue to update knowledge about symptoms COVID-19, vulnerable groups need to be identified by themselves and those around them, prevention by vaccination, physical distancing, prohibition of going home by the government, discipline in wearing masks, and washing hands [26]–[28]. This study found that medical students had a better attitude than non-medical students and a statistically significant result as shown in Table 7. This result contrasts the previous research regarding the knowledge, attitude, and practice of undergraduate students in Indonesia on COVID-19, stating that there was no significant association (p=0.056) [15]. A study in Jordan regarding the attitudes of medical and non-medical students on the COVID-19 pandemic showed that there was no

significant association result (p=0.580) [16]. A study conducted on knowledge, attitude, and practice on COVID-19 among undergraduate students in China showed no significant association between groups of medical and non-medical students (p=0.290) [12]. Students are an important part of Indonesia's educational system, with one of the functions of students, namely as agents of change. Therefore, students' attitude of being educators for society is important in dealing with this COVID-19 pandemic.

Table 6. Knowledge column questionnaire results

	Knowledge	Education				p
		Medical (267)		Non-medical (215)		
		n	%	n	%	
K1	COVID-19 is caused by the very contagious coronavirus.	262	54.9	215	45.1	0.051
K2	The COVID-19 status has been established as a pandemic by the World Health Organization (WHO).	267	55.4	215	44.6	–
K3	COVID-19 has been established by the Indonesian government as a national disaster and emergency.	266	55.6	212	44.4	0.235
K4	Fever is one of the COVID-19 signs.	261	55.4	210	44.6	0.594
K5	One of the COVID-19 symptoms is cough.	264	55.7	210	44.3	0.251
K6	One of the COVID-19 symptoms is a sore throat.	248	56.5	191	43.5	0.121
K7	One of the COVID-19 symptoms is a sense of fatigue or exhaustion.	228	58.9	159	41.1	0.002*
K8	One of the COVID-19 symptoms is dyspnea.	267	55.9	211	44.1	0.039*
K9	Most of the people infected with COVID-19 do not show symptoms.	235	57.5	174	42.5	0.031*
K10	People diagnosed with COVID-19 cannot transmit the virus to others.	244	71.1	99	28.9	<0.001*
K11	COVID-19 symptoms in susceptible people are heavier and potentially fatal.	264	55.5	212	44.5	0.551
K12	Diabetes is one of the risk factors to experience severe COVID-19 infection.	216	69.9	93	30.1	<0.001*
K13	Hypertension is one of the risk factors to experience severe COVID-19 infection.	222	63.1	130	36.9	<0.001*
K14	Heart disease is one of the risk factors to experience severe COVID-19 infection.	241	59.2	166	40.8	<0.001*
K15	Currently, a vaccine has been discovered to prevent COVID-19 and is commercially used.	45	26.5	125	73.5	<0.001*
K16	Antibiotics are the primary medicine to manage COVID-19.	232	68	109	32	<0.001*
K17	Currently, medicine has been discovered for antivirus corona that causes COVID-19 and is commercially used.	241	70.7	100	29.3	<0.001*
K18	Respiratory droplets are particles >5-10 μm in diameter, while droplet nuclei or aerosols are particles with a diameter of <5μm.	253	55.8	200	44.2	0.426
K19	COVID-19 can be transmitted from direct contact, indirect contact, or close contact (in 1 meter) with infected people through respiratory droplets exerted when coughing or sneezing.	266	55.4	214	44.6	0.694
K20	COVID-19 can be transmitted from infected people through aerosol that remains contagious when airborne in a long-distance (more than three hours).	196	55.7	156	44.3	0.834
K21	COVID-19 can be transmitted through contact when subjects touch items or surfaces contaminated with the virus, and subjects subsequently touch mouth, nose, or eyes.	267	55.5	214	44.5	0.446
K22	Avoiding crowded places or places where large numbers of people gather is one way to reduce the risk of transmitting COVID-19.	267	55.5	214	44.5	0.446
K23	Isolation or quarantine is an effective way to reduce COVID-19 transmission.	266	55.5	213	44.5	0.419
K24	Masks are intended for healthy and sick people.	262	55.5	210	44.5	0.485
K25	For surgical masks, the colored layer is worn on the outside, while the white layer is worn on the inside.	256	57.5	189	42.5	0.001*
K26	After removing the mask, it is recommended to wash hands with soap or hand rub.	266	55.3	215	44.7	0.554
K27	Washing hands is one way to prevent transmission of COVID-19.	267	55.4	215	44.6	–
K28	Mr. A traveled from Jakarta City to Semarang City 6 days ago. Then Mr. A complained of coughing, and severe dyspnea, then checked himself into the nearest health service facility (fasyankes) and got a fever of 38.3ºC. Mr, A's case is a Suspect Case.	263	56.2	205	43.8	0.040*
K29	Mrs. B complained of coughing and felt tired since four days ago, then Mrs. B checked herself into the nearest health service facility (fasyankes) and got a fever of 38.2ºC, then Mrs. B conducted an RT-PCR laboratory examination and tested positive for the COVID-19 virus. Mrs. B's case is a Confirmation Case.	261	56	205	44	0.143
K30	Mr. C complained of coughing and went to the nearest health care facility (fasyankes) and got a fever of 38.1ºC and told me that the last 14 days before symptoms appeared had a history of traveling to Jakarta. Mr. C then did an RT-PCR examination two times, and the results were negative for two consecutive days with an interval of>24 hours. Mr. C's case is categorized as Discarded	250	55.3	202	44.7	0.885

Note: *Significant (p<0.05), Chi-square test

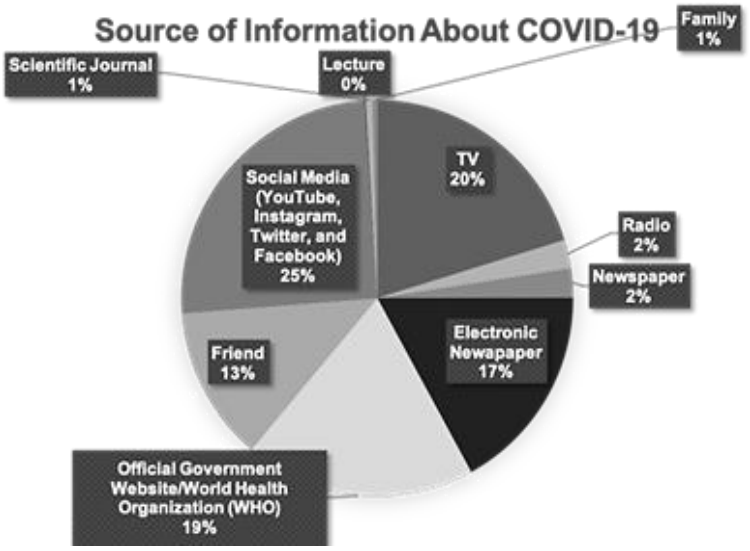

Figure 1. Distribution of how to get information about COVID-19

Table 7. Attitude column questionnaire results

	Attitude	Education				p
		Medical (267)		Non-medical (215)		
		n	%	n	%	
A1	The determination of COVID-19 as a national disaster and emergency is the right step.	266	55.9	210	44.1	0.065
A2	Education for the public about COVID-19 is very important to prevent the spread of COVID-19.	266	55.4	214	44.6	0.694
A3	As a student, I feel I am an educator for the community about COVID-19.	260	57.1	195	42.9	0.002*
A4	The front line in stopping the COVID-19 pandemic is the community itself, not health workers.	249	55	204	45	0.456
A5	The government's decision to ban homecoming is an important effort to reduce COVID-19 transmission in the community.	267	55.5	214	44.5	0.446
A6	Physical distancing or keeping a minimum distance of 1.5m is an important effort to reduce transmission of COVID-19 in the community.	266	55.5	213	44.5	0.419
A7	I have to keep updating my knowledge about the various symptoms of COVID-19.	266	55.8	211	44.2	0.126
A8	Groups at high risk or are susceptible to contracting COVID-19 need to be more vigilant and identified by themselves and those around them.	264	55.2	214	44.8	0.397
A9	Everyone must wear a mask when going out of the house.	263	55.1	214	44.9	0.261
A10	Everyone should wash their hands as often as possible, according to WHO recommendations.	265	55.7	211	44.3	0.247
A11	If the COVID-19 vaccine is available, I will vaccinate myself.	253	55.6	202	44.4	0.703

Note: *Significant ($p<0.05$), Chi-square Test

3.4. Practice on the COVID-19 pandemic

Practices are all human activities or activities, either directly observable or not observable by outsiders. Practices are actions or activities of an organism that can be observed, even learned. Practices are influenced by predisposing factors of knowledge and attitudes and internal and external factors, one of which is an educational process and activities that involve individual or group practice or education [29], [30]. Based on Table 8, the questions about the practice on the COVID-19 pandemic of whether study respondents follow COVID-19 information from official sources, recommending to stay at home, handwashing practice in seven steps following the WHO advice, and more active in maintaining health during this pandemic era and regularly consume medicines if they have comorbids [31]–[33]. These questions had significant results. This reflects the efforts made by local health authorities to make the wider community aware of the prevention of COVID-19 transmission. This study's findings may become the basis for planning awareness campaigns between students in particular and the public in general and help guide the efforts and plans of state health authorities for better containment of COVID-19. However, it should be noted that this study has limitations as this research is limited to several groups of variables with educational backgrounds, namely medical and non-medical students towards the COVID-19 pandemic and also this research uses primary data in the form of a questionnaire, which is difficult to assess attitudes and practices directly.

Table 8. Practice column questionnaire results

	Practice	Education				p
		Medical (267)		Non-medical (215)		
		n	%	n	%	
P1	Are you up to date with the COVID-19 information?	252	56.3	196	43.8	0.170
P2	Are you following COVID-19 information from official sources? (WHO and official government website: https://covid19.go.id)	231	61.4	145	38.6	<0.001*
P3	Did you download the official app regarding COVID-19? (such as Peduli Lindungi and 10 Safe Homes)	35	57.4	26	42.6	0.739
P4	In the last two weeks, have you traveled to any crowded places? (e.g., shopping centers, tourist attractions, and places of worship) If Yes, select "Yes" and state the reason under the "Other" option.	168	53	149	47	0.142
P5	Do you encourage and invite your family or people living with you to stay at home?	258	58.2	185	41.8	<0.001*
P6	Do you wear a mask when you go out of the house? (For those who are still in boarding: do you wear a mask when you leave the room?)	266	55.6	212	44.4	0.235
P7	Have you ever encouraged others to wear masks or reprimanded people who did not wear masks?	241	55.7	192	44.3	0.421
P8	Do you clean your gadgets (communication tools such as cellphones), wallet, and glasses using 70% alcohol or disinfectant when you finish traveling or return home?	165	59.1	114	40.9	0.052
P9	In the last two weeks, have you adopted the WHO recommended 7-step handwashing habit?	255	59.3	175	40.7	<0.001*
P10	If you suffer from diabetes/high blood pressure/heart/kidney disease, are you more active in maintaining your health during this pandemic and taking the medication regularly as recommended by your doctor? (If there is a family member or person closest to the disease, have you ever suggested it?)	222	58	161	42	0.026*

Note: *Significant (p<0.05), Chi-square Test

4. CONCLUSION

Based on the study results, it is discovered that there were statistically significant results in the level of knowledge, attitude, and practice between medical and non-medical students in Indonesia, where medical students had better knowledge, attitude, and practice regarding the COVID-19 pandemic than non-medical students. Therefore, it is necessary to deepen the material regarding COVID-19 among students, especially non-medical students. Information about COVID-19 can be obtained in the form of educational videos (such as short films or documentaries) and counseling or through information media in the form of social media, TV, or official websites of the Indonesian and global governments, which are the three media of information most consumed by the student. Therefore, it takes efforts from students and the local health authority government to make the wider community aware of the COVID-19 pandemic in order to be able to increase knowledge that has an impact on student attitudes and behavior and awareness for better containment of COVID-19.

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BIOGRAPHIES OF AUTHORS

Thania Lathifatunnisa Putri Agusti is a Clinical Clerkship Student, Faculty of Medicine, Universitas Diponegoro. Completed her high school education by taking an accelerated program. She holds Bachelor of Medicine. Assistant Lecturer at the Department of Microbiology and Department of Parasitology. She can be contacted at email: thania.lpa@gmail.com.

Nahwa Arkhaesi is a pediatrician and lecturer in the Department of Pediatrics, Faculty of Medicine, Universitas Diponegoro. She can be contacted at email: narkhaesi@yahoo.co.id.

Anugrah Riansari is a lecturer in the Department of Parasitology, Faculty of Medicine, Universitas Diponegoro. She holds a Master Degree in Hospital Administration and an Internist. She can be contacted at email: anugrah.riansari@gmail.com.

Rebriarina Hapsari is a clinical microbiologist and lecturer in the Department of Microbiology, Faculty of Medicine, Universitas Diponegoro. She studied virology in ErasmusMC Rotterdam, the Netherlands. She is currently the coordinator of COVID-19 laboratory in Rumah Sakit Nasional Diponegoro/Faculty of Medicine, Universitas Diponegoro. She can be contacted at email: rebriarina@gmail.com.