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REMOTE LEARNING FOR NURSING EDUCATION IN INDONESIA DURING THE COVID-19 PANDEMIC: EFFORTS AND RECOMMENDATIONS

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ABSTRACT

The COVID-19 pandemic had an impact on nursing students' academic and clinical performance. Nursing institutions have provided remote learning to continue the learning process. However, students have met several obstacles that caused a decrease in the quality of learning. Remote learning for education requires the support of information and communication technology. However, studies related to how the COVID-19 pandemic affected nursing education in Indonesia are still rarely done. Accordingly, this study was conducted to evaluate the implementation of remote learning for nursing education during the COVID-19 pandemic. A cross-sectional study was conducted with 331 members of the Association of Indonesian Nurse Education Center (AINEC). The instrument used was the *Guidelines of Filling Out Remote Learning*. The results showed that 51% of the study programs implemented remote learning, while 69% of the regulations for remote learning were created by rectors. The most common teaching materials were visual, text, and audio-visual content. These materials were distributed through WhatsApp Group, Learning Management System (LMS), and video conference. To support the process of remote learning, nursing institutions need to improve information technology staff and cooperate agreement with other institutions. Overall, the remote learning process needs to be further improved to increase the students' learning quality.

Keywords: Education; COVID-19 pandemic; nursing; remote learning



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INTRODUCTION

The COVID-19 pandemic has driven changes in many systems, including the health, economic, social, and education systems, due to the limited space for human

movement due to the spread of the *coronavirus* (Cucinotta & Vanelli, 2020; Giatman *et al.*, 2020). For instance, the pandemic has significantly caused a shortage of health workers, facilities, and equipment (Zendrato & Hiko, 2021).

However, the existence of technological developments has made it easier for the healthcare system to achieve system goals. Technology has made it easy for people to get services that are fast, precise, and easy (Harjanto *et al.*, 2018). Moreover, health service performance at the primary and hospital levels has also improved both in clinical and community settings due to technological advancements (Wahyuningrum *et al.*, 2021).

However, the pandemic has negatively affected the education sector and caused a decrease in the quality of learning for students (Sahu, 2020). It is estimated that 91.3% or around 1.5 billion students worldwide were unable to attend school due to the emergence of the COVID-19 pandemic (UNESCO, 2020). This number includes approximately 45 million students in Indonesia or about 3% of the global affected student population (Central Bureau of Statistics, 2020). The pandemic required learning systems to be replaced with remote learning to ensure the continuation of the learning process. Per the instructions of the Ministry of Education and Culture, the government has prohibited universities from conducting face-to-face (conventional) lectures and ordered them to hold online lectures or remote learning (Ministry of Education and Culture Circular Letter No. 1 of 2020).

Remote learning is a form of distance learning that utilizes telecommunications, information technology, and learning processes such as video tutorials, teaching materials, and test questions for evaluation (Fuadi *et al.*, 2020). Its advantages include flexibility as students can learn anywhere and anytime, are able to get a new learning atmosphere according to their respective learning styles, save on transportation costs, and have more time to spend with their family. Moreover, with remote learning, students tend to be more creative, independent, and responsible. Meanwhile, the shortcomings of remote learning are the lack of interaction between lecturers and students, the change in teaching methods (from face-to-face to online), the lack of student motivation, and accessibility as not all students have internet access.

The remote learning process initially received a positive response from students, but over time, students have voiced several obstacles to this learning method, including an unsupportive network, lack of internet data, unfavorable home conditions, and lack of focus (Li *et al.*, 2021). Students also mentioned the obstacles they face because of the many assignments with short deadlines (Azzahra, 2020). Moreover, a previous study has found that the learning environment of online lectures does not support student learning because the process is not properly supervised (Harjanto *et al.*, 2018). In addition, weak internet signals and expensive internet quota fees are challenges in online learning (Azzahra, 2020). Therefore, to improve the quality of the remote learning environment, support from all aspects is needed.

The practice of nursing education has its own challenges in the pandemic era, especially from a clinical perspective. According to the Law on Health Workers No. 36 of 2014, nursing education seeks to produce responsible health workers who have high ethics and morals, expertise, and authority to improve health efforts. Higher education in the field of health as referred to in paragraph 4 article 17 of the Health Manpower Law Number 36 of 2014, is required to balance the implementation of health efforts and the dynamics of employment opportunities, pay attention to the balance of the production capabilities of health workers and available resources as well as the development of science

and technology. The pandemic era has proved that the decreasing number of health workers has encouraged them to maximize the use of technology.

Based on a previous study, the COVID-19 pandemic has had an impact on nursing students' academic and clinical performance (Oducado & Estoque, 2021). Nursing institutions should provide remote learning to continue the learning process. However, students in higher education institutions met several obstacles that decreased their quality of learning. Nursing students in the Philippines reported poor satisfaction with remote learning (Oducado & Estoque, 2021). Remote learning for education requires the support of information and communication technology (Harjanto *et al.*, 2020). Therefore, the university's instructional planning and health-related procedures need to be strengthened to allow students and other stakeholders to continue learning while preventing the spread of the virus (Toquero, 2020).

However, to our knowledge, there is still a lack of studies related to how the COVID-19 pandemic has affected nursing education in Indonesia. Thus, this study was conducted to evaluate the implementation of remote learning for nursing education during the COVID-19 pandemic. In addition, our study also identified remote learning problems in the academic and clinical phase; efforts that had been made by institutions; and recommendations from institutions to improve the quality of learning during the COVID-19 pandemic.

METHOD

Study Design

We conducted a descriptive research study with a cross-sectional design. Secondary data was obtained from the results of a survey conducted by AINEC in May-July 2020.

Study Sample

The study was conducted in Indonesia by distributing research instruments via Google Form to nursing institutions that are AINEC members. The purposive sampling method was used, and the inclusion criteria were faculty members from nursing schools who responded to the AINEC survey within 1 month. The participants were the head of study programs, deans, vice deans, nursing lecturers, and students in nursing institutions. In total, 158 of the 328 nursing institutions were AINEC members that were pursuing the nursing program bachelor's degree in Indonesia. The total number of participants in this study was 331.

Instruments

In this study, we used the instrument from *Guidelines of Filling Out Remote Learning Survey* (Ministry of Research, Technology and Higher Education, 2017). It consists of 5 domains, including remote learning regulation, implementation of remote learning, teaching materials, human resources, and cooperation with other institutions. There are 28 closed questions and 4 open-ended questions. Some questions could have more than 1 answer. We used a validated survey that was further developed from the official guideline from the Ministry of Research, Technology, and Higher Education.

Data Collection

Before this study began, we submitted a permit application letter and obtained permission from AINEC. This study used data from the results of a survey conducted by AINEC of their members in May 2020 regarding Online Learning Evaluation of Nurse Education Institutions.

Data Analysis

Descriptive analyses methods were used to measure the implementation of remote learning in Indonesia during the COVID-19 pandemic. Qualitative data for opened questions was done by simple qualitative analysis. The qualitative data analysis in this study began with a review and exploration of the data, which included gathering all survey responses. The following stage was to create codes. The codes were modified based on the outcomes of the survey. The data were then summarized according to categories or themes. The last step was drawing a conclusion. In this final step, the researchers examined all entries of the same code, grouped these categories, and found the connection among the categories.

Ethical Consideration

This study was approved by the Committee of Indonesian National Nurses Association with the number: 0003/DPP.PPNI/Ket.K.S/IX/2021. Informed consent was obtained from all participants before collecting data. The information collected from the participants was confidential and only used for research purposes.

RESULTS

The participants were from 13 regions in Indonesia with a total of 328 members (Table 1). The total number of participants who filled out the online survey was 331 participants. The highest percentage of online survey submissions were from region 9 (East Java Province), while the lowest percentage came from region 12 (Papua, Maluku).

Table 1. The distribution of AINEC member institution participants

Region	Total members (n = 328)	Online survey (n = 158)
I. Aceh	12	7
II. North Sumatera	15	4
III. West Sumatera, Jambi, Riau, Riau Island	32	15

IV. South Sumatera, Lampung, Bengkulu, Bangka Belitung	18	14
V. DKI Jakarta, Banten	30	11
VI. West Java	31	25
VII. Central Java	31	10
VIII. DI Yogyakarta	15	7
IX. East Java	55	28
X. Bali, NTT, NTB	16	12
XI. Kalimantan	15	11
XII. Sulawesi	51	12
XIII. Papua, Maluku	7	2

The implementation of remote learning for education is shown in Table 2. The majority of regulations related to remote learning were made by the rector (60%). For these regulations, the directions were in the form of circular letters (57%), decrees (42%), and meeting results (1%). Of all nursing institutions, 73% already had plans to implement remote learning. However, only 51% of institutions applied remote learning for all their study programs.

Various lecture strategies were used to run remote learning in their institutions. These include modified materials, self-made content, materials taken from the internet, bought materials, and others. The three common teaching material delivery methods were visual (24%), text (21%), and audio-visual (20%). For organizing the learning activities, most of them used group chats such as WhatsApp (WA) group (41%), followed by video conference (34%), Learning Management Systems (LMS) (15%), and repository (10%). For synchronous activities, the lecturer used Zoom (60%), Skype (11%), BigBlueButton (3%), and others (25%). To support remote learning, the nursing institutions provided internet facilities. The minimal bandwidth that was provided by the institutions was 100 Mbps (Megabits per second) (18%), but some institutions provided 100 – 250 Mbps (35%). The Human Resources (HR) staff that supported remote learning were mostly IT staff (61%), learning media developers (48%), instructional designers (31%), and none (14%). However, to support the process of remote learning, some nursing institutions had a cooperation agreement with other institutions (79%).

Table 2. The implementation of remote learning in nursing education in Indonesia

Domain	The implementation of remote learning	n
Remote Learning Regulation	Regulation maker of learning education^a	
	Rector	269
	Dean	36
	Head of Study Programs	84
	The form of remote learning regulation in college institutions^a	
	Decree	160
	Circular Letter	214
	Meeting Result	5
	Have remote learning strategic plan^b	
	Yes	115
No	43	
Implementation of Remote Learning	The form of remote learning^a	
	Study program in remote learning	38
	Remote learning for all study programs	240
	Remote learning for some study programs	62
	Remote learning as an addition in all study programs	81
	Remote learning as an addition in some study programs	46
Teaching Materials	How lecturers develop teaching materials^a	
	Bought	24
	Self-made	210
	Modified	220
	Taken from the internet	143

Domain	The implementation of remote learning	n
	Others	6
	Various teaching materials^a	
	Text	233
	Audio	197
	Visual	273
	Audio-visual	222
	Animation	78
	Games and simulation	99
	Others	14
	The facilities to organize activities^a	
	Repository	73
	WhatsApp group	309
	Learning Management System	114
	Video conference	250
	The synchronous tools^a	
	Skype	51
	Zoom	275
	BigBlueButton	15
	Others (Google Meet, Webex)	116
	Average of bandwidth^b	
	100 Mbps	28
	100 – 250 Mbps	55
	250 Mbps – 1 Gbps	41
	>1 Gbps	34
Human Resources	Human resources supporting remote learning^a	
	Instructional designers	98
	IT staff	191
	Learning media developers	150
	Others	45
Cooperation with Other Institution	Cooperation with other institutions^a	
	Have cooperation agreements with other institutions	125
	Cooperation plans as an organizer and person in charge	35
	Cooperation plans as an agent	52
	Already cooperate with other institutions as an agent	28

^aRespondents may select more than one choice

^bRespondents only select one choice

Several efforts have been made by institutions, including modifying learning methods, conducting evaluations at the end of practice hours, monitoring and evaluations every week, asking students to make learning resumes (academic phase) and make preliminary reports (clinical phase), modifying client cases to more affordable cases for example with neighbors or family, and motivating lecturers by providing SPADA grants from the ministry. SPADA is one of the Learning Management Systems (LMS) developed by the Ministry of Education that is mentioned in Table 3. Regarding

technical processes, the institution has made several efforts: provided e-learning and blended learning training for lecturers and other staff, created online learning guidebooks and video tutorials, used virtual case analysis role plays, provided LMS, video recordings, conferences, handouts, videos, or e-books that can help students understand the lecture material, provided internet quota for students, prepared supporting infrastructure well, maximized WA group media, Google Classroom, Zoom Meeting, etc.

Table 3. Remote learning problems in academic and clinical phases during the COVID-19 pandemic

	Academic phase	Clinical phase
Learning process	<ul style="list-style-type: none"> a. Suboptimal learning skills in the laboratory b. Student motivation and abilities of learning skills c. Difficulties in understanding material d. Lecture assignments in every course e. Difficulties in designing 	<ul style="list-style-type: none"> a. Limited case media b. Difficulties of virtual reality for clinical skills c. Difficulties to provide methods of achieving psychomotor competence d. Students' difficulties to imagine the given case e. Lack of motivation in completing tasks f. More difficulties in understanding the materials
Technical process	<ul style="list-style-type: none"> a. Limited lecturers and support staff. b. Difficulties in monitoring students to keep following the material until they are finished c. Not all lecturers have mastered the IT skills required in online lectures 	<ul style="list-style-type: none"> a. Bad internet connection b. Lack of proficiency in using IT for students and lecturers c. Clinical perceivers are not used to using online

	Academic phase	Clinical phase
	d. Limited internet quota and network for lecturers and students	d. Lack of professional practice learning media
	e. Expenses for the purchase of internet data	e. Difficulties in designing material that fit real cases
	f. Some students have not been able to use the application	f. Financial needs for internet quota
	g. Difficulties of students adjusting to online learning	g. Distractions, lack of focus, and less comfortable in creating learning atmosphere
Evaluation process	a. Learning objectives only reaching the cognitive aspect.	a. Not all competency achievements can be done by online learning
	b. Laboratory and clinical practice cannot be evaluated.	b. Difficulties in evaluating student abilities
	c. Difficulties to achieve learning objectives related to attitude and psychomotor	c. Difficulties in evaluating student's psychomotor competence
	d. Difficulties in evaluating lessons	d. Students' unsatisfied with the achievement of their competence

To optimize the implementation of remote learning, nursing institutions suggested several recommendations. The recommendations were grouped into infrastructure, human resources, and curriculum (Table 4).

Table 4. Recommendations from nursing institutions to improve remote learning implementation

Infrastructure	Human Resource	Curriculum
a. Establishing remote learning support infrastructure	a. Workshop on online learning for academic and professional stages	a. Providing policy related to remote learning from AINEC
b. Collaborating with providers and application providers	b. Online training for laboratories and clinics using diverse learning media	b. An introduction to remote learning for new students
c. Extending the network to remote places without incurring excessive costs		c. Providing remote learning modules
d. Developing low-cost and easily accessible platform		d. Providing an example of a practicum video based on learning achievement

DISCUSSION

This study aims to evaluate the implementation of remote learning in institutions during the COVID-19 pandemic. The results showed that the power of rectors as principal of universities is important regarding the implementation of remote learning. Rectors are in charge of and responsible for the administration and management of the university (Rector Regulation of Universitas Indonesia, Number 14 of 2016). This suggests that rectors are generally considered as the regulation makers of remote learning in universities.

The COVID-19 pandemic caused a decrease in the learning quality of students in Indonesia. Our study's results showed that 73% of college institutions have a strategic plan for online learning and 51% have applied remote learning for all their study programs. Based on the Guidelines of Remote Learning in Indonesia from the Ministry of Research, Technology and Higher Education RI, it is referred to as a single mode of remote learning. A previous study has also reported that 99.3% of students admitted that the teaching and learning process was done online during the pandemic and only 0.7% did not conduct lectures for various reasons (Giatman et al., 2020).

In line with the guide in the Online Learning Booklet from the Ministry of Education and Culture of the Republic of Indonesia, our study found that the online method which was implemented was WhatsApp group, Learning Management Systems (LMS), repository, and video conferences. In remote learning, the existence of a class is replaced by a virtual class called a Learning Management System (LMS). The LMS was used to facilitate learning activities, discussions, as well as distribute online materials and assignments (Ministry of Education and Culture RI, 2020). Furthermore, the government suggested institutions to use the Indonesian Online Learning System Grant (SPADA). SPADA is a

learning management system that was developed by the Ministry of Education to develop student competencies. Thus, nursing institutions have the option to advance their learning innovation of remote learning by providing LMS (Harjanto et al., 2018).

Lecturers have developed the teaching materials by themselves and by modifying the references. The IEEE defines a learning object as any entity - digital or non-digital - that can be used for learning, education, or training. In the context of remote learning, the learning materials used are digital learning resources that can be packaged and reused in modules, units, courses, or learning programs (Wibawanto, 2019). Various teaching materials are used by lecturers, such as text, visual, audio-visual, animation, games, and simulations. Various teaching materials are provided to gain the students' interest and motivate them to learn the materials provided.

There is a need to empower teaching staff and build their confidence so that they are able to implement remote learning for nursing education (Czemiewicz, 2020). One method of doing so is to provide training and support to the human resources staff required to support remote learning. Our study found that the staff that supported remote learning were mostly IT staff, learning media developers, and instructional designers. However, not only technical support is needed, social and moral support is also required so that the online classes will be delivered effectively (Ali, 2020).

There were several challenges in remote learning during the pandemic. Our study showed that several problems occurred including learning, technical, and evaluation processes in the academic and clinical phase. In the learning process, the majority of problems were about difficulties in understanding the material, especially in the clinical phase. Clinical phase in

nursing takes place in a complicated clinical learning context (Jamshidi *et al.*, 2016). Students need to have adequate knowledge and skill to provide care in clinical rotation (Joolae *et al.*, 2015). However, the COVID-19 pandemic has made the clinical rotation to be replaced with remote learning.

Moreover, various obstacles were encountered by lecturers and students in implementing remote learning for technical processes. Lack of internet connection was one of the major problems during remote learning. Azzahra (2020) stated that unequal internet access, teacher qualification gaps, quality of education, as well as a lack of ICT skills were challenges in remote learning in Indonesia. Internet speed and network problems were common technical issues faced by many people because they were using the internet at once. Some locations also have poor internet signals. According to a previous study, multimedia learning in the form of images, links, or audio and videos tended to be large in data size (Harjanto, 2018). Eventually, both students and lecturers would face problems regarding big internet quota and financial needs.

Several problems were also encountered in the evaluation process. College institutions reported that not all competency achievements can be done by remote learning. The students also reported that there was limited case media, so they found it difficult to imagine the case media given. This is in line with the findings of Aguilera-Hermida (2020) who stated that students have problems with understanding the materials and some lost their internships or clinical practice. Remote learning also makes the evaluation of student abilities challenging; therefore, the learning objective only reaches the cognitive aspect. Meanwhile, learning objectives related to attitude and psychomotor abilities were difficult to achieve.

Another challenge was students' lack of motivation. Patricia Aguilera-Hermida (2020) reported that the biggest challenge was concentrating while being at home due to distractions such as noise, housework, and family members. In conventional learning, students usually actively participate in academic activities due to their face-to-face engagement with lecturers and classmates. Adnan (2020) stated that 71.4% of students reported that learning in conventional classrooms was more motivating than remote learning. However, they also stated that they could manage their study time more effectively with remote learning and they could easily complete assignments in time. Nevertheless, they stated that full courses could not be completed online.

Next, students' motivation is a complex factor as students' self-regulation skills are needed to manage their learning process (Aguilera-Hermida, 2020). Students need to improve their self-efficacy to be successful at remote learning (Kemp *et al.*, 2019). Therefore, lecturers need to encourage the students constantly and promote a positive attitude towards remote learning (Aguilera-Hermida, 2020). Students' motivation and excitement for remote learning should improve as a result of the lecturers' encouragement.

The Ministry of Education and Culture (2020) has created an Online Learning Booklet to guide institutions in implementing remote learning. The booklet consists of strategies that could make remote learning to be more effective and efficient. For the implementation of remote learning, the General Directorate of Higher Education provided remote learning facilitation for universities, namely, the SPADA LMS platform (Ministry of Education and Culture RI, 2020). Based on the results of our study, several institutions have encouraged their lecturers to use the SPADA LMS platform. LMS is a

platform that could be used to access materials, facilitate learning activities through distributing online materials, providing space for discussions, and providing assignments (Harjanto *et al.*, 2018).

Technology has allowed students to simulate real processes and execute virtual experiments that would otherwise be dangerous and expensive to be conducted in a school laboratory. According to Lee *et al.* (2014), the use of Information and Communication Technology (ICT) tools could help students to improve and understand instructional materials. On the other hand, the teaching staff need to be supported and confident in implementing ICT integrated teaching to take advantage of this advancement (Ali, 2020; Toquero, 2020).

Nursing institutions need to modify their curriculum from conventional learning to remote learning. Higher education institutions should integrate environmental and health studies into the curriculum (Toquero, 2020). It is commonly recognized that remote learning has been well implemented by lecturers and students, with the lecturer preparing adequate instructional materials, providing sufficient assignments, and reviewing the assignments given (Giatman *et al.*, 2020). The modified curriculum should also be accessible to all students in the university (Turkoglu, 2019). The limitation of this study was related to the proportion of participants from each region. Some regions have not filled the survey with a percentage of below 50%. In addition, not all question items were answered by participants. As a result, the information of this study maybe could not be representative of the implementation of remote learning in all regions in Indonesia.

CONCLUSION AND RECOMMENDATION

Remote learning for education in Indonesia has been implemented in almost all study programs of AINEC institutions and the majority of remote learning regulation makers were rectors. The most common teaching materials were visual, text, and audio-visual content. Moreover, the WhatsApp group, video conference, and Learning Management Systems (LMS) were used as facilities to organize activities. To support the process of remote learning, nursing institutions need to improve their IT staff and have more cooperation agreements with other institutions. Nursing institutions have also met some obstacles, such as limited lecturers and support staff, difficulties in monitoring students, limited case media for the clinical phase, and lack of students' motivation. Based on these problems, several efforts have been made by institutions, including modifying learning methods, conducting evaluations at the end of practice hours, monitoring, and having evaluations every week, as well as modifying client cases with affordable cases, and providing SPADA.

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