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Abstract

BACKGROUND: The COVID-19 pandemic has changed the order of life in various aspects of life, including the field of education in Indonesia.

AIM: The purpose of this study was to explore student perceptions and acceptance of the advantages and disadvantages of online learning during the COVID-19 pandemic and analyze the factors that influence these perceptions.

METHODS: The research is in the form of a survey using Google forms about the perception and acceptance of online lectures during the COVID-19 pandemic for nursing students at universities in Indonesia, a questionnaire sent through WhatsApp and held from July 1, 2021 to July 30, 2021.

RESULTS: The many of respondents aged 17–19 years (50%) with Diploma-students (62.9%). The most of them have intermediate-level skills in using information technology (82.2%). The platform that is often used is Zoom meeting. The advantages of online learning are that students state that they can study from home (22.2%) and easily access online sources of material (19.9%) and can obtain recordings of each lesson (18.6%). Constraints that are often faced are technical problems (24.6%), very minimal interaction with lecturers (18.4%), and very minimal interaction between students (17.5%). Age and skills in using technology, information and communication have a significant effect on students' perceptions of online learning ($p < 0.05$). Most respondents have a negative perception (52.2%) about online learning.

CONCLUSION: Although there are several advantages to online learning, students' perceptions of the learning process are negative, meaning that they are happier and still want face-to-face learning.

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Introduction

The global pandemic caused by SARS-CoV-2 has caused unprecedented large and wide changes in almost every aspect of the lives of the world's people. Moreover, throughout the United States, social distancing regulations began in March 2020. Education for medical students underwent significant changes in the learning process. For most medical students across the country, all clinical learning has been suspended indefinitely according to the recommendations of the Association of American Medical Colleges on March 17, 2020 [1]. The WHO declared SARS-CoV-2 infection a pandemic on March 11, 2020 [2].

In Indonesia, the first case of COVID-19 was on March 2, 2020; and in the city of Semarang, the first case was reported on March 17, 2020 [3]. Moreover, various ways are done to reduce the transmission of the virus, among others, using standard face masks, maintaining physical distance, maintaining social

distance, and finally vaccination against COVID-19 so that herd immunity can occur [4], [5].

The impact of the pandemic has also affected the world of education in Indonesia. To prevent the transmission of COVID-19, the Minister of Education and Culture Nadiem Anwar Makarim issued Circular Letter Number 4 of 2020 concerning the Implementation of Education in the Coronavirus Disease (COVID-19) Emergency Period. One important point is related to learning from home. The learning activities and tasks may vary between students, according to their respective interests and conditions, including in terms of access gaps/learning facilities at home [6].

Lectures and learning on campus which were originally conducted face-to-face have turned into a form of distance learning or online learning. Online learning is nothing new in the world of education. Online learning requires knowledge about the use of information technology by lecturers and students. There are advantages and disadvantages, but the online learning process will increase student motivation to learn and take responsibility independently [7], [8], [9].

Some of the advantages of distance learning are time and cost-effectiveness. Students and lecturers can manage their time very flexibly. With advances in technology, information, and communication, many learning platforms can be done online. A study on online learning was conducted involving 40 universities in Indonesia during the COVID-19 pandemic. There are 16 media used for distance learning, namely: WhatsApp, Zoom meeting, Google Meet, Edmodo, Google Classroom, Video Call, Email, E-Learning, Webex, Facebook, Schoology, padlet, Microsoft Team, Moodle, Blog, and YouTube. The most frequently used platform is WhatsApp (25%), followed by Zoom meeting (22%) and Google Classroom (15%). WhatsApp is a platform that is often used because it is the easiest to access and operate. The most common problem encountered during distance learning is unstable signals, especially in mountainous areas [10]. In another study, it was shown that the online learning platforms that are often used are Zoom, Microsoft Teams, and WhatsApp [11].

With the change in the distance learning system in several campuses in Indonesia, those who are not used to doing it face many obstacles. The obstacles found were that it was difficult for students to understand the material given by the lecturer because of the lack of interaction between lecturers and students, lack of concentration in the lecture process, and both of these things led to a lack of effectiveness in the learning process [12], [13]. In addition to technical and internet issues, data privacy and security are factors that make the online learning process less effective. However, there are several advantages obtained that students are motivated to learn independently, low costs, convenience, and flexibility [11], [14], [15], [16], [17], [18], [19], [20], [21], [22].

With the COVID-19 pandemic, educational institutions around the world are closed because it will endanger students, including their teachers. So that most educational institutions have started to switch from classroom learning platforms to online learning. Especially for nursing students, online learning [13], [14], [23] materials are poorly understood because in nursing science, there is practical learning to patients that cannot only be carried out online learning, but are each educational institution and students ready with a new model of a learning platform? [24], [25], [26] In this study, we focused on knowing the perceptions and acceptance of nursing students toward online learning through a survey of 404 students.

The research that we conducted was to find out about the perceptions of nursing students about the online learning process during the COVID-19 pandemic in Indonesia, including (1) Characteristics of the respondents, (2) platforms that are often used, (3) advantages and disadvantages/disadvantages of the online learning process, (4) respondents' perceptions of online learning and (5) factors that influence the perception and acceptance of online learning.

Methods

Participants

The research is in the form of a survey using Google forms about perceptions and acceptance of online lectures during the COVID-19 pandemic for nursing students at various universities in Indonesia. The questionnaire was sent through WhatsApp and randomly collected 404 nursing students from various universities in Indonesia. Participants voluntarily took the survey and participants agreed before answering online. To minimize bias in surveys, Google forms are limited to one response per account and allow people to complete the form only once, in addition, there is no pressure to influence answers and there are no rewards or fees to participants.

Data collection procedures

The research was conducted in July 2021 when the learning process was still online. An online survey using Google forms distributed through WhatsApp to nursing students consists of (1) characteristics of students, namely, age, education level, semester has taken, skills in using technology, information, and communication facilities, (2) the learning platform used, (3) the advantages and disadvantages of online learning, and (4) students' perceptions of online learning were assessed using a reliable instrument with a Cronbach alpha value of 0.93. Participation in the study is voluntary, personal data and information are not collected. This study was approved by the Research Ethics Committee of the K.R.M.T Wongsonegoro Regional Hospital, Semarang City.

Data analysis

The data analysis process goes through several stages, namely: (1) Editing is done using the help of MS Excel software (version 2016, Redmond, USA) by selecting respondents according to the sample criteria, ensuring all respondents fill out the form completely, filtering *missing* data; (2) coding is done by changing qualitative data into quantitative data in the categorical form; (3) tabulation and *data entry* are done by summarizing the data into variables needed in the analysis and then the data are imported into SPSS software (version 23, Inc. Chicago, IL USA); and (4) data analysis consists of two, namely, univariate and bivariate analysis. Univariate analysis was conducted to obtain a description of the characteristics of the respondents along with the distribution of research variables by displaying the proportion of data (mean, standard deviation (SD), frequency, and percentage). Bivariate analysis was conducted to examine the factors that influence student perceptions using the Chi-square test with a significance value of 0.05.

Results

Table 1 shows the characteristics of respondents including age, education level, semester taken, skills in using Information and Communication Technology (ICT) and experience in participating in online learning before the pandemic. The majority of respondents are in the age range of 17–19 years (50%) with a Diploma student's level (62.9%). The most of the respondents took the third semester (33.2%), dominantly having moderate/intermediate ICT skills (82.2%) and had never participated in online learning before the pandemic (75.5%).

Table 1: Characteristics of respondents (n = 404)

Characteristics	Frequency	Percentage
Age		
17–19 years old	202	50
20–22 years old	149	36.9
23–25 years old	7	2.7
>25 years old	46	11.4
Educational level		
Diploma students	254	62.9
Undergraduate students	131	32.4
Graduate students	19	4.7
Semester taken		
1	74	18.3
2	70	17.3
3	134	33.2
4	54	13.4
5	40	9.9
6	28	6.9
7	2	0.5
8	2	0.5
Information Technology Skills		
Low	11	2.7
Intermediate	332	82.2
High	61	15.1
The experience of participating in online learning before the pandemic		
Never	305	75.5
Once	99	24.5

Figure 1 shows the types of platforms that are often used by students in online learning and dominantly use Zoom (61.6%), there are also students who use other platforms such as WhatsApp groups, Google Classroom, and others.

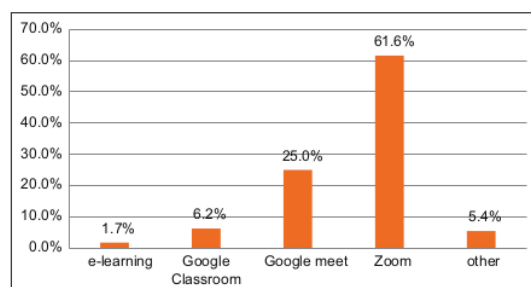


Figure 1: Platforms used in online learning

Figure 2 shows the percentage of students' perceptions about the advantages of online learning and it was found that the majority said thanks to online learning, students can still stay at home (22.2%) and easily access online sources of material (19.9%) and can record/obtain recordings of each lesson (18.6%).

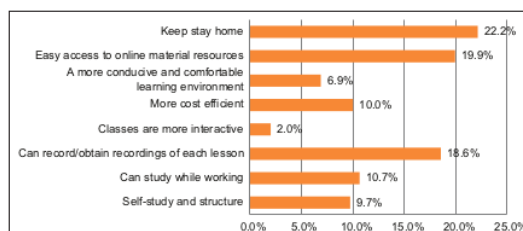


Figure 2: The advantages of online learning

Figure 3 shows the percentage of students' perceptions of the weaknesses of online learning and it is found that the majority revealed that when online learning, technical problems often occur (24.6%), interaction with lecturers is very minimal (18.4%) as well as interaction between students is very minimal (17.5%).

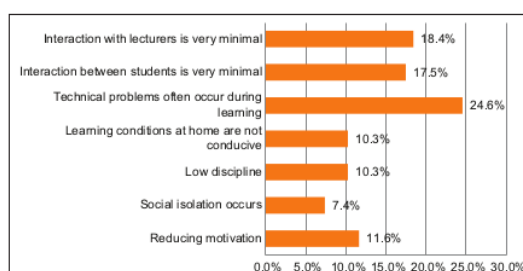


Figure 3: Weaknesses of online learning

Table 2 shows students' perceptions of online learning, assessed using a Likert scale from 1 to 5, the higher the average, and the better the student's perception. Of the 12 statement items, there are two items with the highest average answer (Score 4), namely, students perceive that online learning can improve students' skills in using media/platforms and online learning can improve students' social competence.

Table 2: Average student perceptions of online learning (n = 404)

No	Student perception	mean	SD
1	Student understanding of online lectures with lecturers	3.10	0.699
2	There are wider and more diverse interactions/networks during online learning	3.49	0.876
3	There is an increase in the motivation of students and lecturers when learning online	3.27	0.935
4	Lecturer material updates are more comprehensive during online learning	3.49	0.850
5	Collaboration and interaction between students are better when learning online	3.04	0.938
6	The online learning process increases learning activities (asking; answering; taking notes; and discussing)	3.29	0.941
7	Online learning increases student interest in being able to access other online materials	3.56	0.890
8	Online learning increases students' independence and skills in using media	3.88	0.827
9	Online learning can enhance the learning experience with various platforms/media	4.01	0.747
10	Online learning can improve students' media/platform skills	4.01	0.715
11	Online learning can improve social competence in students	3.23	0.912
12	Student's impression of online learning	3.27	0.972

The perception score is then categorized with a *cutoff point* using the median value of the data (median = 41) which means that if the total score of the respondent's answers is >41 then the perception is declared positive, while if the total score of the respondent's answer is 41 then the perception is declared negative. It was found that most respondents had a negative perception (52.2%) about online learning (Table 3).

Table 3: Categorization of student perceptions regarding online learning

Perception	Frequency	Percentage
Negative	211	52.2
Positive	193	37.8
Total	404	100

Further analysis was conducted to find out what factors influence student perceptions and the results are presented in the following table:

Table 4: Factors that influence student perceptions

Characteristics	Perception		Total f(%)	p-value*
	Negative f (%)	Positive f (%)		
Age				0.045
17–19 years old	110 (54.4)	92 (45.5)	202 (100)	
20–22 years old	82 (55)	67 (45)	67 (100)	
23–25 years old	4 (57.1)	3 (42.9)	7 (100)	
>25 years old	15 (32.6)	31 (67.4)	46 (100)	
Educational level				0.063
Diploma students	144 (56.7)	110 (43.3)	254 (100)	
Undergraduate students	59 (45)	72 (55)	131 (100)	
Postgraduate students	8 (42.1)	11 (57.9)	19 (100)	
Information and Technology Skills (IT)				0.040
Low	7 (63.6)	4 (36.4)	11 (100)	
Median	181 (54.5)	151 (45.5)	332 (100)	
High	23 (37.7)	38 (62.3)	61 (100)	
The experience of participating in online learning before the pandemic				0.962
Never	160 (52.5)	145 (45.7)	305 (100)	
Once	51 (51.5)	48 (48.5)	99 (100)	

*Chi-square test.

In tabel 4, the results of statistical tests showed that age and IT skills had a significant effect on students' perceptions of online learning ($p < 0.05$). This is supported by the distribution of data which show that the 17–25-year age group tends to have a negative perception, while the >25-year age group has a positive perception. It can be said that the more mature the age, the more positive the student's perception of online learning. Based on IT skills, it shows that students who have low skills tend to have negative perceptions while students who have high skills dominantly have positive perceptions. It can be said that the more skilled students are in IT, the more positive their perceptions about online learning are.

Discussion

The research that we did was to find out the weaknesses and strengths of online learning during the COVID-19 pandemic, especially nursing students at several universities in Indonesia. In addition, I also want to know the most frequently used learning platforms and nursing students' perceptions of online learning and the factors that influence it. From our research, the majority of respondents are aged 17–19 years with the most education level being Diploma students. The most of the

respondents are students who are currently studying in the third semester, and most of them already have knowledge and skills about middle-level information technology. Regarding the online learning experience, the most of the students had never participated before the COVID-19 pandemic.

Just like other studies, it was reported that the most of the students who were taking online learning during the COVID-19 pandemic had never been familiar with *online learning*. Although the students have never been formally introduced to E-Learning at university, some of them have knowledge of several platforms used such as Alison and Google Classroom; this may be the students study alone or take private lessons [25], [26], [27].

In our research, Zoom is a platform that is often used by students in online learning, followed by Google Meet and Google Classroom. Research conducted in Ghana on 467 students, the most frequently used online learning platforms during the COVID-19 pandemic were WhatsApp (50.5%), Google Meet (18.2%), and Zoom meeting (17.6%), while others using YouTube and Facebook [27]. Another study also reported that the platform that is often used to conduct online learning is WhatsApp [28], [29]. In addition, there are also those who use a combination platform WhatsApp with Zoom meetings, and WhatsApp with Google Classroom [29]. Reasons for using WhatsApp are that every lecturer and student has the application on their smartphone. With WhatsApp, you can have discussions to discuss lectures through WhatsApp groups (WAG). This application allows all members to share files of various types. Including college assignments can also be collected into WAG. Other platforms that are often used are Email, Google Classroom, and Zoom meetings [28].

A report supports our research, the platform that is widely used in the online learning process in Italy, Japan, the US, and China is Zoom meeting [30]. The most significant advantage of using Zoom meetings is that there is a discussion through video which can then be recorded and stored in hard drives [31]. Through video platforms enable a sense of connection between lecturers and students for reciprocal discussions and sharing of other information in real time [32].

Students' perceptions of the advantages of learning through Zoom, most of them revealed that learning activities can be followed from home and easily access learning materials even though they live far from the city and can record or obtain recordings every time there is a learning process. Besides that, it also feels comfortable to be able to study at home [33].

The data that we obtained show that the weakness of online learning that is felt by students is that it is often disrupted due to network problems and other technical problems, the lack of interaction between students and lecturers and interaction between students. Another study showed that the weakness of online learning

is that some teachers face technical difficulties using online platforms and creating e-content to deliver material to students, thus disrupting the process of transferring knowledge to students. An unstable internet connection is a problem that often interferes with the quality of the learning process. With some of these obstacles, students show a less serious attitude in carrying out the tasks given to students. Teachers and students alike find it difficult to carry out the online learning process well [29], [34]. For medical students, online learning causes interactions with patients to be greatly reduced, thereby reducing the quality of learning [33].

Students' perceptions of online learning are that they can improve skills in using technology, information, and communication in the form of learning platforms/media and online learning can improve social competence. However, based on the scores, we made in this study, we found that the most of the respondents had negative perceptions about online learning. In contrast to the Sri Lanka study of 171 students, it showed that most were satisfied with online learning during the COVID-19 pandemic [34]. A Polish study of 804 medical students assessed that most of them were happy with online learning; however, they stated that online learning was less effective for training skills than face-to-face learning [33].

Student perceptions of online learning are influenced by several factors, including the age of the respondents, and skills in using information technology. In the 17–25-year age group, they tend to have negative perceptions. Meanwhile, the age group above 25 years has a positive perception, which means that most agree and accept online learning well. Hence, it can be said that the more mature the respondent is; the perception of online learning is positive. For students who have high skills in using ICT show positive perceptions, while those with low skills tend to have negative perceptions. Of course, those who are familiar with information technology will find it easier to use the platform used for online learning and will not experience many obstacles, so the perception is positive. Meanwhile, students who are less skilled will definitely have difficulty using the learning platform resulting in negative perceptions. To determine the acceptance of online learning, we do not use a special method but only by knowing the perceptions of students. If students have negative perceptions, it means that online learning acceptance is also low.

A cross-sectional and web-based study was conducted on 340 medical students at King Abdulaziz University, 2020. Using Google forms for data collection, there are three constructs, namely, tutor quality, perceived usefulness, and facilitating conditions, as a standard measure of E-Learning acceptance measure. The conclusion is that it is sufficient for medical students to accept E-Learning during the COVID-19 pandemic. Moreover, it is recommended to increase training for students and tutors, improve e-course design, increase interaction, motivation, and increase blended learning [35].

Not many studies discuss the factors that influence the perception and acceptance of online learning models.

Conclusion

Online education and learning processes are the right choices at a time when the COVID-19 pandemic sweeps across the world, which requires *physical* and *social distancing* to be implemented. There are advantages to online learning, but there are also many obstacles faced by lecturers and students to implement it. The most of the students have never experienced online learning and many do not understand the use of ICT in this new model of learning.

The change in the learning process from face-to-face models in the classroom to distance learning or online is a challenge for students in particular. From our research, the most frequently used platform is Zoom because it has the advantage that students and teachers can interact through video and can record it during lectures which can then be stored on a computer or *smartphone*. Regarding the perception of nursing students toward online learning during the COVID-19 pandemic, most of them have negative perceptions, which means they do not like the learning process of the model and prefer face-to-face learning.

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Ethical Consideration

The authors have entirely observed ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.).

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