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Perception of distance learning among undergraduate medical students during COVID-19 pandemic

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ABSTRACT

In response to the newly emerging coronavirus disease or COVID-19 pandemic and its profound consequences on the world, many changes have been made to medical education. It includes teaching and learning methods that ensure the educational process's success. The Andalas University Faculty of Medicine, Indonesia had to implement new online teaching strategies. This study examined how medical students perceived online education during the COVID-19 outbreak. The study is cross-sectional, employed online questionnaires. The response was that most students prefer face-to-face learning in practicum and clinical skills, which require hands-on methods to improve student skills. Half the students were satisfied, and several were neutral about distance learning. The student who agrees that the lecturer is active and has the expertise and knowledge for the class is more satisfied with distance learning ($p<0.001$). The student who agrees about the platform quality, understandable learning guide, and facility from faculty has a higher level of satisfaction with distance learning ($p<0.001$). This study concluded that a medical student at the Andalas University Faculty of Medicine was mainly satisfied with the institution's response to the pandemic. However, medical faculty must evaluate and improve the quality of education in online learning.

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1. INTRODUCTION

COVID-19 has changed many aspects of life. In a circle from the World Health Organization (WHO) related to the pandemic of March 2020, social distancing was applied to economic, religious, and academic processes to prevent transmission [1]. With the emergence of the first case in Indonesia on March 6, 2020, the Ministry of Education and Culture of the Republic of Indonesia issued Policy No. 36962/MPK.A/HK/2020 in the form of a circular letter on online learning and working from home in the context of preventing the spread of the coronavirus disease (COVID-19) [2], [3].

All learning methods at the Faculty of Medicine, Andalas University, Indonesia, shifted from face-to-face to an online learning system. Large classes of expert lectures and small classes of tutorial discussions, practicums, and clinical skills were conducted online using Zoom, Ms-team, and i-Learn [4], [5]. The medical students at Andalas University consisted of national and international students. The students came from various islands in Indonesia and were international students from Malaysia. During the COVID-19 pandemic, students returned to their places of residence and studied online from home.

In the 2020/2021 academic year, the faculty divided students into students in the preclinical and clinical stages. In the clinical stage, students are divided into online and hands-on groups. In case reports, literature reviews, or online journal reading, online groups carry out scientific activities. The hands-on group conducted offline activities in the hospital in small groups and ran patient simulations. Pre-clinic students conducted online learning activities in Zoom, Ms-team, and i-Learn. Lecturers can provide i-Learn facilities by learning videos and discussions that students and lecturers can provide. The faculty conducted summative assessments using a safe examination browser. They supervised by showing the test card and the video turned on during the exam [5], [6].

Practicum and clinical skills are difficult to learn online at the Faculty of Medicine, Andalas University, because they contain psychomotor elements and skills [7], [8]. Students are given guides and videos of practicum activities or clinical skills and then discussed through Zoom, Ms-team, and i-Learn applications. Using this method, students can access learning directly from their homes.

The increase in COVID-19 transmission cases has allowed medical schools to adapt and learn quickly. There is a difference in satisfaction levels between developing and developed countries. Studies in the United Kingdom report that interactive learning can achieve 59.73% with distance learning, but 75% of online learning cannot replace offline learning with clinical skills. [9]. Meanwhile, 77% of students negatively perceive distance learning during the pandemic in Pakistan [10]. Research in Indonesia conducted at the University of North Sumatra showed that only 20% of students are active during online sessions, and more students are educated in face-to-face learning sessions [11]. This difference in perception and satisfaction makes researchers want to conduct research in the Faculty of Medicine at Andalas University. This study examined medical students' perceptions of distance learning and the obstacles and opportunities they faced during the COVID-19 pandemic.

This research is descriptive, with a quantitative and cross-sectional approach using a questionnaire of 30 questions designed by the medical education team and uploaded to the Google Form. It was conducted at the Faculty of Medicine, Andalas University, from June to August 2022. The population comprised undergraduate students, academic year 2nd-4th. The simple random sampling method used in this study resulted in 333 respondents. The minimum number of samples was determined based on Lemeshow's sample formula. The research variables were the results of an evaluation of distance learning during the pandemic. Subject inclusion criteria were undergraduate students willing to complete a questionnaire. Other than those, study program participants were excluded. Descriptive statistic and chi-square test were used in the analyses. The cut-off for statistical significance was P=0.05.

2. RESEARCH METHOD

The Research Ethics Committee of the Faculty of Medicine has carefully reviewed the research protocol and approved it on 26-09-2022 with approval No.964/UN.16.2/KEP-FK/2022. Permission to collect data was obtained from the Faculty of Medicine, Andalas University, Indonesia. The participants were told that their information confidentiality was maintained. Informed consent was obtained from the front of Google Forms.

This research is descriptive with a quantitative and cross-sectional approach using a 30-question questionnaire designed by the medical education team, which is a modification of an existing questionnaire [12]. The Cronbach's alpha for the entire questionnaire was 0.826. This study was conducted at the Faculty of Medicine, Andalas University, Indonesia, from June to August 2022. The study population comprised undergraduate students at the Faculty of Medicine, Andalas University, academic year 2nd-4th. The purposive used in this study resulted in 333 respondents. The research variables were the results of an evaluation of distance learning during the pandemic. Subject inclusion criteria were undergraduate students willing to complete a questionnaire, while exclusion criteria were students other than those.

The respondents were given a 28 items questionnaire with eight questions about sociodemographic traits. There are five main sections of the questionnaire. Hence, six questions about the responses made up the first section of the questionnaire. Five questions about benefits made up the second section of the questionnaire. Two items about downsides were included in the questionnaire's third section. Six items about obstacles were included in the questionnaire's fourth section. The students' perspectives on online learning were the subject of the questionnaire's final section. The questionnaire used a Likert scale consisting of five answer choices: strongly agree, agree, neutral, disagree, and strongly disagree. To answer positive questions, strongly agree is given a value of 5, agree is assigned a value of 4, doubt is given a value of 3, disagree is given a value of 2, and strongly disagree is given a value of 1. The analyses included descriptive statistic and chi-square test. Statistical significance was set at $P<0.05$.

3. RESULTS AND DISCUSSION

3.1. Characteristics of the respondents

Table 1 shows the characteristics of the subjects by age, gender, academic year, location, and Internet charges. The respondents were predominantly female (75.5%), with more than 18 generations (59.9%). There were 197 students (57.2%) declareded their enrollment at least one year before the COVID-19. There were 272 (81.7%) residents of Sumatra while participating in distance learning due to the pandemic. The others are residents of various locations, such as Java, Kalimantan, Sulawesi, and Malaysia. The average monthly internet data cost spent by students was IDR 150,000 (USD 9.8).

Table 1. Characteristics of the respondents

Item	Frequency	%
Gender		
Female	252	75.7
Male	81	24.3
Age		
≤18 years old	132	40.1
>18 years old	201	59.9
Academic year		
2nd year	136	40.8
3rd year	107	32.1
4th year	90	27.1
Demographic		
Sumatera	272	81.7
Java	52	15.6
Kalimantan	3	0.9
Sulawesi	5	1.5
Malaysia	1	0.3
Internet charge (IDR)		
<50,000	7	2.1
50,000–100,000	60	18
101,000–150,000	90	27
151,000–200,000	77	23.1
>200,000	99	29.7

3.2. Responses, advantages, disadvantages, and limitations of distance learning

Implementing distance e-learning in medical education can be difficult, particularly in low- to middle-income nations. Distance e-learning adoption challenges can be broken down into three main categories, technology/infrastructure, institutional, and student. Additionally, this was shown by the difficulties that study participants reported. Lack of resources such as technology, infrastructure, and internet access, as well as the low quality of available internet services, are obstacles that affect both students and faculty [12]–[14].

Table 2 reports the responses, advantages, disadvantages, and difficulties of distance learning. Among the students, 75.68% said they were well prepared, 82.8% were well trained, and 78.38% had an easy-to-understand learning guide. Students reported having multiple advantages, including time-saving (66.37%), better interaction with the lecturer (76.58%), improved learning (75.68%), better instruction (73.27), and good support for online learning from the faculty (74.17%). The main drawbacks were poor communication with the lecturer (11.71%) and difficulty understanding online learning (13.51%). There were 180 students (54.05%) reported home chores as their primary challenge. Other challenges were conducive space to study (30.63%) and internet access (19.52%).

The COVID-19 pandemic has changed many aspects of life, including the medical education system. Clinical education, closely related to direct contact with humans, is finally carried out online and makes faculties innovate to create ideal online learning. On the other hand, this can also be the first step in transforming medical education into the digitalization era. Although it is still far ahead, implementing lectures during the pandemic can be used as monitoring and evaluation material [14], [15].

Time-saving and better interaction with the lecturer were rated as the main benefits of our survey. According to a systematic review of medical institutions conducted during COVID-19, flexibility was one of the major benefits of distance learning.[16] In addition, a Libyan survey of 3,348 medical students found that more than half thought online classes might provide appropriate engagement [15].

Our findings indicated that home cores and accommodating space limits are difficult, despite these advantages and the drawbacks of distance learning. The Suez Canal Study, which revealed that keeping secure at home while studying and learning in one's place was considered the main advantage, came to a different conclusion [17], [18]. Bad internet access is another issue. Universities in Brazil provided students

with preloaded internet packages if they lacked sufficient access to Wi-Fi on their home SIM cards. The Indonesian government also provides an internet package for students and instructors, but it does not appear to be widely spread [19].

This study also showed that mental health is a challenge in distance learning. These findings align with the data from Germany that revealed students experienced significant distress in online learning during the pandemic [20]. A recent study showed that the stress level of medical students in online learning in the COVID-19 era was dominated by high stress, with the cause of stress being dominated by academic stressors (academic related stress or ARS). This study also found mental health disorders as challenges in 11.71% of students [21].

Table. 2 Distance learning, reported responses, advantages, disadvantages, and difficulties (n=333)

		Number of students (%)
Responses	Students well prepared	252 (75.68)
	Lecturer well trained	276 (82.8)
	Good support of the platform	272 (81.68)
	Clear assessment and evaluation	244 (73.27)
	Easy-to-understand learning guide	261 (78.38)
	Students are satisfied with distance learning	191 (57.36)
Advantages	Time-saving	221 (66.37)
	Better interaction with the lecturer	255 (76.58)
	Improved learning	171 (75.68)
	Better instruction	244 (73.27)
	Good support from the faculty	247 (74.17)
Disadvantages	Poor communication with the lecturer	39 (11.71)
	Difficulty understanding online learning	65 (13.51)
Limitations	Home-chores	180 (54.05)
	Conducive space limitations	102 (30.63)
	Poor internet access	65 (19.52)
	Mental health or disorders	39 (11.71)
	Poor financial capacity	37 (11.11)
	Lack of suitable devices	9 (2.70)

3.3. Students' satisfaction with distance learning

In order to understand student perspectives on online learning, including their perceptions of the lecturers' perceived expertise in online learning activities, perceived technology complexity, perceived ease of understanding learning guides, and faculty support for online learning, a cross-sectional descriptive study was conducted. During the COVID-19 pandemic, Indonesia conducted online learning, which marked a dramatic shift in how students were taught in classrooms. Even though the pandemic may not end this online learning model, Indonesia will be able to use it as a new form of education going forward. Therefore, it is important to understand how satisfied students are with their education and what variables can influence them. Overall, 191 students (57.36%), as shown in Figure 1, were delighted with their medical distance learning experience. The significant factors linked to the level of satisfaction included the instructors' role, the platform used to provide good support, an understandable learning guide, the lecturers' expertise in teaching online, and the faculty providing facilities to support online learning.

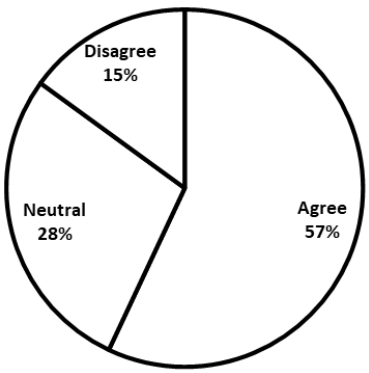

Figure 1. Students' satisfaction with distance learning

3.4. Students' responses with distance learning

In Table 3, due to improving student skills, some students preferred face-to-face methods for hands-on activities, such as practicum (77%) and clinical skills (63%). The critical issue that most medical schools had during this pandemic was how to teach the practical and clinical components of the medical curriculum via distance learning. Most students struggled with the online format for practical programs like clinical skills and practicums. Accordingly, a recent Saudi Arabian study advised mixing learning in the future, where practical lessons are given in person [22].

Table 3. Responses about the method of distance learning

		Percentage of students
Clinical skills	Face-to-face learning	63%
	Online learning	8%
Practicum	Face-to-face learning	77%
	Online learning	5%

3.5. Correlation between students' level of satisfaction and variable

Based on Table 4, the students who agreed that the lecturer was active and had the expertise and knowledge of the class had a higher level of satisfaction with distance learning. Students who disagreed that the lecturer was involved in the class were less satisfied with distance learning ($p<0.001$). Students who agreed about platform quality, understandable learning guides, and faculty facilities were more satisfied with distance learning. Students who disagreed with the platform quality, comprehensible learning guide, and facility from faculty were less satisfied with distance learning ($p<0.001$).

Since technology is now a part of modern student life, the online learning approach enables this to continue. They no longer had any substantial issues using the technology for online study. Online instruction also allows pupils to experiment and think for themselves [23], [24]. Virtual learning appears to be successful, and universities aim to boost student interaction and participation by further developing these resources. The education of medical students needs to be approached more holistically, COVID-19's psychological effects on students need to be taken into account, and virtual platform security and technology need to be improved [25].

This study comes to the conclusion that while e-learning can augment the existing educational process, it cannot take the place of the current educational system [26]. Technology, pedagogy, and topic knowledge are the three primary areas in which the faculty must build their competencies. The management of online learning modules as well as administrative and technological abilities, are additional challenges that may need adjustment. A top-notch online learning platform will promote academic accomplishment by enhancing learning readiness and encouraging interaction and collaboration [27], [28]. One of this study's drawbacks was the inability to assess the educational outcomes connected to distance learning and contrast them with those of conventional learning.

Table 4. Correlation between students' level of satisfaction and variable

Variable	Level of satisfaction			P value
	Satisfied n (%)	Neutral n (%)	Not satisfied n (%)	
Lecturer active for student learning				
Agree	182 (65.9)	72 (26.1)	22 (8.0)	
Neutral	8 (17.0)	21 (44.7)	18 (38.3)	<0.001
Disagree	1 (10.0)	1 (10.0)	8 (80.0)	
The platform used to provide reasonable support				
Agree	184 (67.6)	67 (24.6)	21 (7.7)	
Neutral	7 (17.9)	19 (48.7)	13 (33.3)	<0.001
Disagree	0 (0.0)	8 (36.4)	14 (63.6)	
Learning guide understandable				
Agree	177 (67.8)	63 (24.1)	21 (8.0)	
Neutral	13 (24.5)	28 (52.8)	12 (22.6)	<0.001
Disagree	1 (5.3)	3 (15.8)	15 (78.9)	
Lecturers have the expertise and knowledge to teach online				
Agree	163 (66.8)	60 (24.6)	21 (8.6)	
Neutral	26 (34.7)	32 (42.7)	17 (22.7)	<0.001
Disagree	2 (14.3)	2 (14.3)	10 (71.4)	
Faculty provide facilities to support online learning				
Agree	171 (69.2)	53 (21.5)	23 (9.3)	
Neutral	19 (26.0)	37 (50.7)	17 (23.3)	<0.001
Disagree	1 (7.7)	4 (30.8)	8 (61.5)	

4. CONCLUSION

During COVID-19, traditional education (face-to-face) will abruptly transition to online instruction. This transition is required. However, medical students at Andalas University's Faculty of Medicine were generally pleased with the organization's reaction to the pandemic. The theoretical components of the medical curriculum will be appropriate for online classes. However, face-to-face interactions are required for the practical and clinical parts. The ability to successfully implement blended learning will be dependent on an appropriate information technology infrastructure in the future of medical education. Medical faculty members must be prepared for the next generation of digital learners using virtual learning. This research does not mean that traditional classroom instruction is obsolete but that both methods can be used in a hybrid manner, thus making the learning process efficient and effective.

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