Teachers' and Students' Perception Toward Competency of Undergraduate Medical Students During the Covid-19 Pandemic

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Abstract. **Background:** The Covid-19 pandemic has become a worldwide disaster. The Covid-19 pandemic has impacted all sectors of life, including medical education. Medical student competence was decreased during online learning during the Covid-19 pandemic. This study aims to explore the perceptions of teachers and students toward medical science competence when viewed from the aspect of knowledge, skills, and effectiveness. Methods. The research approach used qualitative methods with a phenomenological approach and the data collected data with interviews and focus group discussions (FGD). The population was all undergraduate medical education students who were still active. Participants were determined by the purposive sampling method. Analysis of qualitative data by making transcripts, coding, and thematic analysis. Results. The perception of teachers and students towards the competence of clinical and affective skills of online learning students was lower than offline learning. Knowledge competence in online learning was almost the same as in offline learning. Conclusions. The competence of clinical and affective skills was not achieved by students but the knowledge competence was achieved in online learning during the Covid-19 pandemic.

Keywords: Competency · covid 19-pandemic · online learning · undergraduate medical student

1 Introduction

The Covid-19 pandemic become as disaster in the world that has happened suddenly and massively, this pandemic has affected in rapid changes in various fields of life including in the field of education which previously had never thought of what solutions would be implemented in education. The Covid-19 pandemic has occurred for the past 2 years, since January 2020 and has spread widely in all countries in the world, including in Indonesia [1]. Based on data from the Ministry of Health of the Republic of Indonesia,

until January 2022, the number of Covid-19 confirmed positive were 4,289,305 people [2].

All educational institutions were taking actions to adapt to the conditions of this pandemic. The only way for education to continue is through online learning, including medical education, both undergraduate education and clinical clerkships. The rapid implementation of the learning system become as challenge of the institution to face these rapid changes. There were institutions that immediately adapt and that were technology, lecturers and students in the institution that take a long time to adjust [3]. Based on data from one of the private universities in Yogyakarta, Indonesia, about 70% of students said that online learning was difficult to them [4].

Online learning has advantages that are efficiency of learning, the costs are not expensive, easier to implementation and the possibility for students to complete learning assignments. Online learning also has many limitations including the lack of social interaction such as social space, social support, social presence and less relationships between teacher and student. Other limitations are the need for mastery of computers or technology, support from institutions, need for self-motivation readiness, environmental disturbances at home, lack of instructions from lecturers, signal problems, boredom and require time commitment [5].

Online learning in medicine was faced with a number of limitations, such as students feel a rapid changes in the learning system, delay in giving assignments and lectures, recording quite a lot of lectures, lack practice of clinical skills, overwhelmed with learning obligations, lack of discussions and lectures, sleep disturbances and communication limitations between teachers and students.[1] Other impacts that occur in the disruption of learning were changes in clinical rotation, distance between patients and health care providers and requiring high concentration and limited in health services [6].

Some studies related to Covid-19 were increasing rapidly in medical education. However, there were limited studies that were discussed the perception of students and lecturers towards the medical student competence in the mastery of medical material at the undergraduate. Most research focuses only on education in clinics or clerkship. Existing researches were about the challenges felt by student during the Covid-19 pandemic where the challenges of student communication, collaboration, solidarity, empathy, personal health and evidence-based practice are challenges [7].

Monte-Signoret study on the perceptions of clerkship students, lecturers and residents towards online learning, from the result, it was recommended to assess the effectiveness of online learning in clerkships about competence of medical skills and communication skills.[8] Muhlif's study investigated the perceptions and behavior of medical student towards online learning during the Covid-19 pandemic but the study used a quantitative approach and the results showed that students were pessimistic about the competence of doctors' professional skill but that study was not illustrated how a deeper picture of the competence of medical students [5]. Johora et al.'s study in Bangladesh examined the impact of online learning on public and private of university with a survey method, it was found that students felt a loss of clinical skills and competence during Covid-19 [9]. Other study, by Dost et al.'s, examined student's perception of teaching and learning in the United States during the Covid-19 pandemic with a questionnaire, the results found that online learning was effective in achieving learning goals [10]. In our study,

it was different from previous study, we were exploring the perceptions of students and teachers about mastering the competence of undergraduate medical materials so we can get a deeper picture.

Based on the background, this study aims to explore the perception of students and teachers of undergraduate medical education toward the mastery of medical competence in online learning during Covid-19 pandemic.

2 Literature Review

A. Competence

One of the standards that must be achieved by medical education students is the achievement of competence. The achievement of competence is more towards the professionalism of the long-term target of a profession, while the learning achievement is the expected achievement in the general education process [11].

The Competence in medical education is usually called Competency-Based Medical Education (CBME). The definition of competence based on CBME is structured of abilities from various domains of performance in the actual context. An ability that can be seen as professional, integrating various components such as knowledge, skills, values and attitudes. Competencies may change over time, based on experience and field conditions. The Competence can be assessed and measured to ensure achievement [12].

Medical education competence can be measured using the level of competence that must be achieved based on the Pyramid proposed by Miller as shown in Table 1.

B. Online-learning environment

Online learning is a learning environment that affects students achievement. A conducive learning environment can increase student achievement but an inappropriate environment can hinder student's achievement [14, 15]. The Covid-19 pandemic has had a changing impact on the student learning environment in educational institutions, namely the online learning [15]. Online and face-to-face systems are physically different. Based on Ruiz's study, online learning environments increased student knowledge [16]. In contrast to the study of Al Qhtani et al., they found that online learning was less effective in gaining knowledge and skills [17]. Some advantages of online learning are that it is easy to implement, students can be motivated, good instructional design, lack of interaction and effective of teacher time [17, 18]. The e-learning method was quite well received by medical students as shown by the research of Ibrahim et al., medical students received online learning well and they also were motivated to learn [18].

The online learning environment or usually referred to as distance e-learning consists of two methods that are using computer technology and internet-based learning or virtual classroom [19]. Based on a systematic review conducted by Wilcha on virtual teaching during the Covid-19 pandemic, it was found that teachers developed various kinds of internet-based learning such as web and other applications. The positive impact in online learning from the research was the student's effort to activate peer-learning to reduce stress due to the COVID-19 pandemic [20].

Table 1. Miller's Pyramid [13]

No	Level	Assessment methods
1	Does	Review of medical record activity records (decision, documentation)
		Perspective of the collective of clinical competence committee, The decisions of the resident committee
		Rotation evaluation
		360 degrees feedback
		Patient data, patient reports
		Portfolio
		Field observation data
		Case log
		Product review
		Project
2	Show how	The Objective structured clinical examination (OSCE)
		Oral case presentation
		Clinical skill simulation
		Skill station
		Virtual reality/computerized patient management problem
3	Know how	Recall by diagram
		Individual learning plan
		Mock oral board examination
		Progressive case disclosure
		Patient management examination
		Writing assignment
		Written exam
4	Knows	Multiple choice question (MCQ)
		Short answered test
		Audience response system
		Oral questioning
		Recall

Undergraduate medical education at the University of Lampung, online learning was conducted with virtual classes, zoom applications, google meet, V-class universities, you tube and various other websites. The zoom application has advantages in terms of the number of students, can encourage students to study, can be used longer, students can be free to behave, can see each other through the camera and students can be divided into groups through breakout rooms [21]. Zoom application has some limited that are fatigue to the body and eyes, boredom and students forget the teacher when meeting face to face [22].

3 Method

The study design was a qualitative with a phenomenological approach. Qualitative research to explore student perceptions of mastery of undergraduate medical student

competencies. The study was conducted in April-Augustus 2022, at the Faculty of Medicine, University of Lampung. The population was undergraduate students of medical education. The participants were elected by purposive sampling and the maximum variation based on gender, year of student and Grade Point Average (GPA) (<3.00 and >3.00). One group of students consists of 8–10 students, a total of 37 FGD student participants. Teachers were also a sample in this study, as interview participants as many as 7 teachers. Data collection was collected with focus group discussions to explore student perceptions. The interview method was conducted by face to face with teachers. Focus Group Discussions were conducted with zoom application. Before the FGD, the researcher made an appointment with the students, explained the purpose of the study and asked the students' willingness to become participants in the FGD by filling out informed consent. Interviews with lecturers with semi-structured interviews conducted face-to-face after making an appointment, then explaining the research objectives and asking the lecturers' willingness to fill in the informed consent.

Data analysis was analyzed with thematic analysis. The first step was to write the transcription of focus group discussion and interviews. Furthermore, member checking with the transcript was confirmed to the participant's representative for confirmation. Then the researcher and the team read the transcript to get an overview of the contents of the FGDs and interviews. After getting an overview of the data, the research team made coding for each transcript. Each transcription was coded by two coders. Two coders checked the coding results and made an agreement about coding results. Then, researchers team made categories of FGD coding results of interviews and FGD. Next create some themes from several categories. Furthermore, the results of the themes that have been obtained were displayed in the form of diagrams.

4   Result and Discussion

During the Covid-19 pandemic which lasted more than two years, all learning activities were conducted with online. Most of the learning activities such as large class lectures at the undergraduate stage of medical education at the Faculty of Medicine, Lampung University were mostly conducted through the zoom application. Large class, problem-based learning, clinical skills laboratory, non-skill laboratory and exams were also conducted with online through two applications were zoom applications and google form.

The phenomenon that occurs online learning in large class learning activities, students have been reached, lack of interaction with students and less than optimal student learning outcomes. During exams, students seem to be unfocused and trying to be dishonest, but the grades still were good. When learning online clinical laboratory skills, students look confused because of the lack of available tools such as mannequins and the tools needed. Likewise, during exams, students look less confident and student exam results were also less than optimal. Laboratory practice also encountered obstacles, that students did not see directly the preparations or materials in the laboratory. In the ethical aspect, students were also somewhat lacking, for example, they did not answer the teacher's greetings.

Based on interviews with teachers and FGDs with students, there were four themes regarding the achievement of student competencies, that were aspects of knowledge
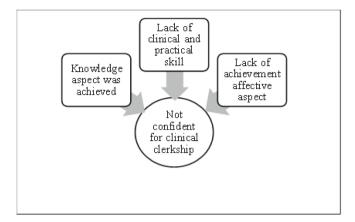
Fig. 1. Students and teachers perception toward undergraduate medical student competence.

achieved, lack of achievement of clinical skill competencies and lack of affective aspects and students seemed less confident when entering the clerkship stage. The results are showed in Fig. 1.

A. Attainment of knowledge aspect

According to students and lecturers, competence in the knowledge aspect was achieved during online learning. The results of this study can be seen in the quotation below.

"Students batch 2020-2021, who experienced online learning, showed that their mid-block and final exam achievements were the highest achievement, as long as I am as a lecturer in basic block learning" (I1, A).

"If the material is like what I said earlier, online was fun at the beginning of learning relatively without thinking about time so that the time can be used for learning nothing else, easy to understand, maybe there was a sense of enthusiasm to be online, the pressure was not too tense so the score was good" (F3, D).

But in the online problem-based learning and non-skill practicum, students have difficulty understanding the knowledge.

"But what was contradictory, I saw in tutorial learning, the depth and breadth of the material discussed was lacking, in my opinion active participation was not directly *proportional to offline"* (I2, A).

"In histology, we usually look at the preparations together, indeed we can show them on a glass screen together, but to familiarize students with using a microscope and whether the student really observes it could not ensure that what we share was understood, but if it's in our class can monitor, but the crowd was so ineffective even though it was still achieved, because it is not hands on but can't be specific to see students" (I4, S).

B. Lack of achievement of clinical skills

Students did not understand the clinical skill learning material. This can be seen in the quote below

"In my opinion, learning seems to be as good as it used to be, now learning clinical skills is still confusing. In the past, offline was good. We have mannequins or practice them. Now, the mannequins are so simple, we don't really understand." (F3, I).

"The students just do it, they only fulfilled the steps, even though they don't do that, so what else can you do, yes, in the middle of mastering it because they don't use the best tools, teachers also found it difficult to pay attention" (I1, M).

Learning clinical skills with online learning was less effective. Below, we can see the transcript of the interview and FGD.

"Clinical skills and practicum using skills like that, we understand better and are more involved in learning through offline because we immediately do it and then if something goes wrong, it is immediately given feedback and can be addressed by the lecturer so that we can understand offline better than online" (F3, D).

"I think the online CSL doc is less effective, yesterday I felt clinical skills offline, I felt more connected because we studied more seriously, so we really understood the night before studying first, so basically it was more connected because we met the lecturer directly" (F2, P).

C. Lack of achievement affective aspect

The behavioral or affective aspects of the online learning process were also less than optimal, such as student empathy for patients and student honesty during online exams.

"At the time of the clinical skill exam, we tried to be a patient. "When the patient was sad, we talked about it sadly, for example, at that time, I was as a patient of Obstetrics and gynecology, they asked for a history, "this is my second baby and the first was abortus", even though talking to people, they only think of it as a narrative, of all only one or two people expressed who empathized "oh I'm sad, ma'am" (I1, M).

"During the online exam we don't know whether the student was honest or not, because we have tried actually during the exam using two devices, one was connected to the google form to fill out the exam and the other we use the zoom media to monitor him from the side and slightly backwards so cheating will be bigger when it's online" (I4, S).

D. Student not confident during clerkship

Teachers feel that students were not ready to enter clinical clerkship.

"Teaching 2018 students who entered the clinical clerkship during this pandemic feels like teaching from the basics again" (I5, N).

"Graduates of online students entering clinical clerkships are very less compared to offline graduate students from the aspect of clinical knowledge and skills including from the aspect of professionalism" (I6, T).

The results of this study, regarding the perceptions of students and lecturers on the achievement of student competencies, indicate that the competence of the knowledge aspect was achieved, the clinical skills aspect was not achieved, the affective aspect was also not achieved and students were not ready to enter the clinical clerkship.

These results indicate that online learning affects the achievement of student competencies in aspects of clinical or practical skills. Student clinical skills were less than optimal in their achievements. Based on interviews with lecturers and FGDs with students, it was found that the cause of the lack of clinical skill achievement was due to limited tools or mannequins, only watching videos, the tools used were improvised, there was no direct feedback from the lecturer so that they did not know mistakes in carrying out the steps of the skills learned. However, according to students, because clinical skills must be tested, students try to learn as much as possible all the material that has been taught because they were afraid to fail and repeat the course or skill the next year. The results of this study were the same as the results of Meyer's study, it was found that the clinical skills of venous puncture students decreased during the Covid-19 pandemic due to reduced opportunities to practice clinical skills [23]. Other study, the Syal et al.'s study showed that the clinical skill aspect of students was less than optimal during the Covid-19 pandemic [24]. The result was also same with Tashkandi's study with a quantitative approach, students feel that their clinical skills and physical examination were not good with online learning [25]. The results of a systematic review conducted by Pei and Wu were almost the same which shows that online learning could improve the knowledge and skills of medical education students [26].

Aspect of knowledge was no difference between online learning and offline learning. Students feel in knowledge aspect, the students could still learn because the online system was flexible, the study time was flexible and there was a lot of free time so that students could study harder. When learning online, students also did' not feel anxious during exams so they were confident in examination. However, it was different from the teacher's observation that there were student obstacles from problem-based learning, where students in discussions were not deep and not active. In laboratory practicum activities, teachers also seen that teaching practicum was not optimal so it was feared that students did not understand well. The results of this study were in line with Tashkandi's research on online learning using a questionnaire, showed that the achievement of online learning knowledge for medical education students was quite good while for clinical skills and physical examinations it is not good [25]. This study differs from the results of research by Al Qhtani et al., which showed that the attainment of knowledge and skills was inadequate during online learning [17].

The impact of online learning was also seen when students enter the clinical clerkship phase. After completing their undergraduate medical education, students then enter the clinical clerkship phase. Students who had studied online for two years, they seem not ready to deal with patients at the time of clinical clerkship. Students' knowledge and

skills were still lacking as well as attitudes and lack of self-confidence. Teachers were like teaching again about the basics of knowledge that have been learned during under-graduate medical education. Students felt difficult to study and exam in the clerkship during Covid-19 pandemic with online learning [27]. A different study was conducted by Lashley et al., students who had good self-confidence during online learning at the clinical clerkship had an effect on the achievement of good knowledge, clinical skills and social skills. This showed that not all students were not confident in the clinical clerkship [28].

The affective aspect of competence in the online learning was also not achieved by students. This can be seen from the teacher's perception that students were lacking in expressing empathy for patients and teachers felt doubts about students' honesty when students taken online exams. Mouden et al.'s study showed that during the online learn-ing of the Covid-19 pandemic, students feel stressed and difficult to show professional behavior such as respecting lecturers, consulting with teachers, depersonalization prob-lems and emotional exhaustion. This was due to the limited interaction between students and teachers [29]. Findyartini et al.'s study about student's professional identity during the pandemic was found that student lack of professional identity during online learning because of lack of interaction between student and teacher [30].

This study showed that the achievement of student competence was still lacking during the Covid-19 pandemic. The most notable result was the lack of attainment of clinical skills and professionalism. This study showed that online learning could be applied to only some learning activities and it was not effective in other learning activities. Based on literature, online learning during the Covid-19 pandemic has limitations and it was not as effective as offline learning. Mortagy et al.'s study showed that 54.6% of medical students felt that online learning was not as effective as offline learning [25].

The limitation of this study was that the method only used qualitative approach, so it was necessary to confirm the value obtained during the knowledge test. Clinical and affective skills. The results of this study can be used as the basis for making decision and interventions to improve students' clinical skills and affective aspect.

5 Conclusions

Based on the semi-structured interview with teacher and FGD with students about the achievement of the competence of undergraduate medical students with the online learn-ing during Covid-19 pandemic, it was still not achieved by students where knowledge competence has been achieved but for clinical and affective skills competence has not been achieved. Need for intervention by the institution to fill gaps of the competence, especially the clinical skill and affective aspect of undergraduate medical students.

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