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COVID-19 SPECIAL COLLECTION

RESEARCH ARTICLE

Student and faculty perceptions related to online learning during the COVID-19 pandemic in Indonesia

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Abstract

Introduction: This study aimed to explore pharmacy students' and faculty members' perception of online learning at the Faculty of Pharmacy Universitas Andalas. **Methods:** A survey was administered to 522 undergraduate students, 140 pharmacist professional students, and 51 faculty members via an online electronic survey (Google Forms). Demographic data, online learning experiences, and online learning acceptance of students and faculty members were collected through the survey. **Results:** Five hundred forty-five students and 36 faculty members of the Faculty of Pharmacy Universitas Andalas participated in this study. Online learning was mostly delivered using Zoom, combined with other media (47.3%). The majority of faculty members and students agreed that online learning could achieve knowledge learning outcomes (LOs), but not attitude LOs and skills LOs. More than a half of students and faculty members perceived that online learning is less effective. **Conclusion:** In general, the faculty members and students perceived that online learning was not very effective and only considered to achieve some aspects of LOs. As the COVID-19 pandemic is not over yet, it seems that online learning is the reasonable option for conducting learning activities. However, the learning activities and media should be carefully selected to ensure the achievement of all aspects of LOs.

Introduction

In response to the COVID-19 pandemic and rising cases of this novel disease in Indonesia, local and national authorities have taken several measures to prevent disease transmission (Indonesian Ministry of Health, 2020). In addition to general preventive measures such as maintaining physical distancing and hygiene, several adjustments have been made in educational activities (Radjasa & Priyoningsih, 2020). As a result, the traditional, face-to-face, in-class lectures have been completely replaced by online learning.

Online learning has been utilised in colleges and universities, including pharmacy schools (Efferth, 2011). Its utilisation has risen due to several factors, such as advancement in technology and the development of higher education (Schindel et al., 2013). However, the adoption of online learning across countries may vary due to cultural differences (Almaghaslah et al., 2018; Lean et al., 2020). During this pandemic, it seems that the traditional methods of learning are challenged and replaced with online learning, regardless of the state of online learning implementation in the respective higher

education institutions (Almarzooq et al., 2020). While this disruption may lead to negative impacts for the learners in the sense of social interaction, it also results in the delivery of innovative teaching and learning approaches (Sandhu & de Wolf, 2020). Video conferencing, digital media, virtual simulation, and social network services are among online learning media that provide learning opportunities for students, not only for gaining knowledge, but also improving critical thinking and communication (John et al., 2016). Online learning has also been associated with greater learning performance compared to traditional learning methods (Vo et al., 2017).

The Faculty of Pharmacy Universitas Andalas organises both the undergraduate programme and pharmacist professional programme, which is in accordance with the national education system for pharmacists in Indonesia. The undergraduate programme is a four-year programme with baccalaureate qualification (Bachelor of Pharmacy/ *Sarjana Farmasi*, S.Farm.). This programme is the foundation for a one-year professional programme with a smaller portion of in-class learning activities compared to the undergraduate programme, and stronger emphasis on experiential education (Rector of Universitas Andalas, 2020).

In accordance with the national standard of higher education, both undergraduate programme and professional programme have learning outcomes (LOs) which consist of four aspects: attitude, knowledge, general skills, and specific skills (Rector of Universitas Andalas, 2020; Undergraduate Pharmacy Study Programme Faculty of Pharmacy Universitas Andalas, 2020). The LOs of each course are documented in the lesson plans, which are digitally available for students on iLearn, the learning management system (LMS) developed by the university.

Prior to the COVID-19 pandemic, most learning activities at the Faculty of Pharmacy Universitas Andalas were conducted face-to-face. This includes lectures, laboratory practice, and experiential placements. The mid-term examinations and final-term examinations, the major components of student assessment for each course, were generally conducted in an offline setting. Despite having an LMS, the implementation of blended learning at the Faculty of Pharmacy was not optimum. The LMS iLearn was generally utilised to store and share lesson plans and learning materials for students. In the professional programme, however, iLearn was a useful monitoring tool for the faculty preceptors to monitor the students at their experiential placement sites, such as hospitals, pharmacies, community health centers, as well as in other pharmaceutical industries.

As the COVID-19 pandemic prompted pharmacy schools, including the Faculty of Pharmacy Universitas Andalas, to look for an alternative learning approach other than traditional lectures, it is important to explore how online learning implementation is perceived by students and faculty members. The sudden need to conduct full online learning despite limited time for proper transition may lead to various perceptions from students and faculty members. Considering the limited published studies about how online learning is implemented during the COVID-19 pandemic, this study aimed to explore pharmacy students' and faculty members' perspectives of online learning at Faculty of Pharmacy, Universitas Andalas.

Methods

Study design and setting

This study was a part of teaching and learning evaluation at Faculty of Pharmacy Universitas Andalas, which is conducted by the Quality Assurance Task Force every semester. The question items were derived from the standard instruments established by the Institute of Education Development and Quality Assurance at the university level (Institute of Education Development and Quality Assurance Universitas Andalas, 2019). Due to the implementation of online learning, some adjustments were made to the instruments. The adjustments were decided by the representatives of the Quality Assurance Task Force at Faculty level and the Quality Assurance Task Force at Programme level. The adjusted instruments were then used to evaluate the implementation of online learning in the Undergraduate Programme and the Pharmacist Professional Programme. The instrument for faculty members consisted of 33 questions, while there were 36 questions for the students. Only questions related to online learning are included in this article.

There were fifty one faculty members, 522 undergraduate students, and 140 professional programme students of the Faculty of Pharmacy Universitas Andalas at the time of conducting this study. They were invited to complete the teaching and learning evaluation survey on 12-15 May 2020. Ethics approval could not be obtained for this study because it was conducted while university closure policy was reinforced due to the rising cases of COVID-19. There was no compulsion for the respondents to complete the survey. Although respondents' names were recorded in the survey, they were removed prior to data analysis and the data was not traced back to them.

Data collection

The survey was administered via an online electronic survey (Google Forms). Demographic data of students and faculty members was collected. The survey contained questions about modes of Internet access, modes of online learning services (LMS or social media, or combination), perception of online learning effectiveness, as well as the obstacles to conducting online learning.

The link to the online survey was shared in a WhatsApp Group of faculty members, as well as a WhatsApp Group of students on 12 May 2020. To increase the response rate, a reminder was sent to complete the survey before the data collection period ended on 15 May 2020.

Data analysis

Demographic data and categorical data were analysed descriptively.

Results

Demographic data

A total of 545 of 662 (82.32%) undergraduate and professional programme students participated in this study. Of the 545 student participants, 80.7% (N=440) were undergraduate students, while 19.3% (N=105) were pharmacist professional programme students. Most of the participants were not scholarship grantees (N=448, 82.2%), had working parents (N=470, 86.2%), and lived with their families during the COVID-19 pandemic (N=509, 93.4%), with 402 (73.8%) student respondents living outside Padang, the city in which Universitas Andalas is located. The demographic data is provided in Table I below.

Thirty-six of 51 faculty members participated in the survey, creating a response rate of 70.6%. As can be seen in Table II below, 14 (38.9%) faculty member participants were assistant professors, while 16 (44.4%) taught the undergraduate programme. Unlike the students, most (88.9%, N=32) faculty member participants lived in Padang during the COVID-19 pandemic.

Online learning experiences

To access the online learning, students mostly utilised pre-paid Internet services (N=437, 80.2%) with moderate Internet signal quality (71.6%). The students mostly used laptops and mobile phones to access online lectures and other activities. The online learning media use according to students and faculty members can be seen in Table III below.

Table I: Demographic data of students

Demographic characteristics of students	n (%)
Study programme	
Undergraduate programme	440 (80.7)
Pharmacist professional programme	105 (19.3)
Received scholarship	
Yes	97 (17.8)
No	448 (82.2)
Residence	
Boarding house	36 (6.6)
With family in Padang	107 (19.6)
With family outside Padang	402 (73.8)
Internet signal quality	
Good	88 (16.1)
Moderate	390 (71.6)
Poor	67 (12.3)
Devices used to access online learning	
Laptop	49 (9.0)
PC	3 (0.6)
Mobile phone	155 (28.4)
Combination of laptop and mobile phone	333 (61.1)
Combination of all devices above	5 (0.9)
Type of Internet network accessed	
Prepaid Internet package	437 (80.2)
Postpaid Wi-Fi network	108 (19.8)

Table II. Demographic data of faculty members

Demographic characteristics of faculty members	N (%)
Academic position	
Professor	8 (22.2)
Associate Professor	6 (16.7)
Assistant Professor	14 (38.9)
Lecturer	8 (22.2)
Residence	
Padang	32 (88.9)
Outside Padang	4 (11.1)
Devices used to access online learning	
Laptop	12 (33.3)
PC	1 (2.8)
Mobile phone	1 (2.8)
Combination of laptop and mobile phone	21 (58.3)
Combination of all devices above	1 (2.8)
Type of internet network accessed	
Prepaid internet package	11 (30.6)
Postpaid Wi-fi network	25 (69.4)

According to the students' responses to the questionnaire, most of the lectures (47.3%) were delivered using a combination of Zoom and other applications, followed by Zoom only (45.7%). This suggests that most online learning activities were delivered using a synchronous approach.

Generally, faculty members utilised diverse media to deliver teaching online, such as WhatsApp Group (27.8%), Google Classroom (19.4%), and Zoom (16.7%). Other than using single media, some faculty members also utilised a combination of Zoom and other learning media (13.9%).

Table III: Online learning media use, according to students and faculty members

Online learning media	N (%)	
	Students	Faculty members
WhatsApp Group	16 (2.9)	10 (27.8)
Google Classroom	1 (0.2)	7 (19.4)
Zoom	249 (45.7)	6 (16.7)
iLearn	9 (1.7)	2 (5.6)
Zoom, combined with other media	258 (47.3)	5 (13.9)
iLearn, combined with other media	12 (2.2)	4 (11.1)

Perceptions of online learning

As seen in Figure A, 305 (56 %) students agreed that online learning could achieve the knowledge-related course LOs. However, they generally perceived that online learning could not achieve generic skills (N = 293, 53.8%) or pharmacy-specific skills (N=393, 72.1%). Interestingly, almost half the students (N=236, 43.3%) did not believe that online learning can achieve attitude LOs, while almost a third of students (N=179, 32.8%) did not know whether online learning can attain attitude LOs.

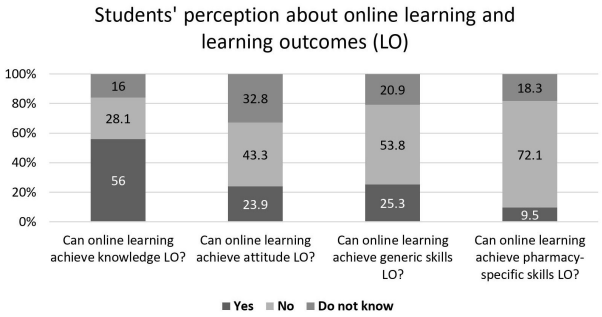

Figure A: Students' perception of online learning and LO

On the other hand, 33 of 36 (91.7%) faculty members generally agreed that online learning could be utilised to attain LOs related to knowledge, while 21 (58.3%) perceived that online learning can achieve attitude LOs. Faculty members do not believe that online learning can achieve LOs related to generic skills (44.4%) and pharmacy-related specific skills (66.7%), as illustrated in Table IV and Table V.

Table IV: Students' acceptance of online learning

Acceptance of online learning	N (%)
Effectiveness	
Highly effective	2 (0.4)
Effective	57 (10.5)
Less effective	398 (73.0)
Not effective	88 (16.1)
Understanding of learning materials	
Highly understand	1 (0.2)
Understand	212 (38.9)
Not really understand	326 (59.8)
Hardly understand	6 (1.1)
Major complaints of online learning	
Not interactive	163 (29.9)
Easily get bored	153 (28.1)
Quite tiring	90 (16.5)
Quite boring	100 (18.3)
Major obstacles to online learning	
Higher cost	268 (49.2)
Poor internet signal	40 (7.3)
Unstable internet signal	222 (40.7)
Preferred mode of learning	
Fully online	26 (4.8)
Fully face-to-face	250 (45.9)
Blended learning	269 (49.4)
Most effective online learning media	
WhatsApp group	47 (8.6)
Google Classroom	17 (3.1)
Instagram	1 (0.2)
Skype	4 (0.7)
Zoom	157 (28.8)
iLearn	27 (5.0)
Combination	292 (53.6)

Table IV and Table V below illustrate students' and faculty members' perception of online learning, respectively. The students perceived that online learning itself was not very effective (73.0%) and 58.3% of the faculty members had the same opinion. The study results further revealed that students have moderate difficulties in understanding the material when delivered online (59.8%).

Table V: Faculty members' acceptance of online learning

Acceptance of online learning	N (%)
Effectiveness	
Highly effective	3 (8.3)
Effective	10 (27.8)
Less effective	21 (58.3)
Not effective	2 (5.6)
Major complaints of online learning	
Not interactive	19 (52.8)
Easily get bored	2 (5.6)
Quite tiring	3 (8.3)
Quite boring	4 (11.1)
Major obstacles to online learning	
Higher cost	5 (13.9)
Poor internet signal	2 (5.6)
Unstable internet signal	16 (44.4)
Preferred mode of learning	
Fully face-to-face	4 (11.1)
Blended learning	32 (88.9)
Most effective online learning media	
WhatsApp group	1 (2.8)
Google Classroom	1 (2.8)
Zoom	14 (38.9)
iLearn	1 (2.8)
Combination	19 (52.8)

Most students (92.8%) have complaints towards online learning, with 'not interactive' (29.9%) and 'easily get bored' (28.1%) being the most frequent complaints. In addition, 52.8% of faculty members also pointed out that online learning was not interactive. Furthermore, nearly half (49.2%) the students perceived that higher cost was the main obstacle of online learning, while unstable internet signal was perceived as the main obstacle by the faculty members (44.4%).

In the near future, 49.4% of students and 88.9% of faculty members would prefer a combination of online learning and face-to-face learning. In general, the students perceived that the most effective media use for online learning is a combination of media (53.6%) such as Zoom and iLearn (the LMS used in the university). The faculty members also preferred a combination of online learning media (52.8%) as the most effective medium to deliver online teaching and learning.

In terms of academic regulation related to learning process and assessment, 27 (75%) faculty members perceived that an adjustment is needed in this pandemic. Meanwhile 395 (71.4%) student participants perceived that the number of assignments needs to be reduced.

Discussion

This study aimed to explore pharmacy students' and faculty members' perception of online learning at the Faculty of Pharmacy Universitas Andalas. While the faculty has incorporated online learning to complement conventional learning, it was not until the COVID-19 pandemic that online learning became the major learning approach, in consequence of university closure. It is suggested from this study that online learning was delivered through various media with different characteristics. For example, several media such as iLearn, Google Classroom, and WhatsApp Group allow asynchronous learning, while Zoom enables interactive learning in a virtual setting. However, there is some room for improvement of online learning at the Faculty of Pharmacy Universitas Andalas, particularly in terms of effectiveness and digital access and equity.

In Saudi Arabia, the teaching and learning process also transitioned to virtual teaching which was supported by the use of an LMS called Blackboard and virtual meetings and classes via Microsoft Teams and Zoom. The faculty members were involved with the college's technology support team to help their colleagues. The obstacles that occurred were related to the technical aspects, such as the downtime of the LMS (Almetwazi *et al*., 2020). In Australia and Malaysia, the teaching and learning process was also switched to virtual teaching and learning. The LMS Moodle was also used, paired with virtual class platforms such as Zoom (Lyons *et al*., 2020).

The online learning at the Faculty of Pharmacy Universitas Andalas did not have much impact on the delivery of theoretical courses. By using synchronous learning media (e.g. Zoom, Microsoft Teams, or Google Meet), the lecturers delivered their courses directly to the students with a similar atmosphere to in-class lectures. The faculty members participated in this study perceived that online learning can achieve LOs related to knowledge and attitude, but the achievement of LOs related to generic skills and specific skills are challenged, due to the limitations to do laboratory practice during the pandemic. Other studies also show that online learning can replace the traditional learning for theoretical courses without many challenges from the students' perspective, but implementing fully online methods for practical and experiential learning is very challenging (Okereke et al., 2020; Shawaqfeh et al., 2020).

In addition to the undergraduate level of Universitas Andalas, the pandemic also posed a challenge to the learning activities at the professional programme. Due to travel restrictions and strict protocol implemented by the

practice sites (hospitals, community health centers, and pharmaceutical industries), the experiential education at the university was delivered online, with preceptors sharing their experiences and guiding the students in using online learning media (Quality Assurance Unit of Pharmacist Professional Programme Universitas Andalas, 2020). Problems of conducting laboratory practice and experiential learning have also been reported in other countries, such as Nigeria and Malaysia (Kawaguchi-Suzuki et al., 2020; Lyons et al., 2020). To address this issue, the Association of Indonesian Pharmacy Higher Education encouraged its partner institutions to create learning videos in competition. The best submitted videos were then edited and shared with the partner institutions for general use as learning material (Association of Indonesian Pharmacy Higher Education, 2020). In the US, where experiential learning is a significant portion of the pharmacy profession curricula, several approaches were also implemented, such as remote experiences using telemedicine or virtual communication platforms with faculty members acting as preceptors (Fuller et al., 2020). There is also evidence in nursing education suggesting that simulated experiences can be an acceptable alternative to supplement clinical hands-on experience for up to 50% of clinical hours (Hayden et al., 2014). However, despite potential development of virtual learning for simulated experiences, for example using augmented and virtual reality, simulation cannot fully replace real clinical experiences (Woolliscroft, 2020).

Both students and faculty members in this study perceived that online learning is not very effective. However, measuring the effectiveness of online learning cannot be solely based on subjective assessment and there is evidence to suggest that online learning is useful and effective (Lean et al., 2018, 2020; O'Hare & Girvin, 2018). There is limited evidence that online learning improves skills and increases long-term knowledge, considering that the effectiveness was assessed subjectively, and improvements were observed immediately after the learning process (Salter et al., 2014). While other studies have suggested that online learning is effective for improving knowledge and skills of pharmacy students, it is not a replacement for conventional methods of learning, but can be used in combination (Makhdoom et al., 2013; Noori et al., 2015).

This study suggests that students and faculty members generally favoured blended learning over fully online learning or face-to-face lectures. These findings are different from other studies that revealed the students preferred online learning to other types of learning (Rowe et al., 2012; Suda et al., 2013). Another study reported that students preferred traditional, in-class learning (Almaghaslah et al., 2018). However, a study conducted in Malaysia showed that most students favoured blended learning rather than a single learning approach, be it classroom learning or online learning (Lean et al., 2020). Other studies also suggested that blended learning is better for healthcare professionals than traditional learning (Makhdoom et al., 2013).

Other issues that are closely related to online learning are digital access and equity, particularly for students. The students who participated in this study generally used pre-paid Internet packages, which may have a rather unstable signal. This may affect online learning experiences and cause a financial burden for students, as they need to spend higher costs for the Internet package. The faculty addressed this issue by giving aids to students who have financial difficulties in getting Internet access, yet there are other things that can be done to promote digital equity. As most of the students used pre-paid Internet services, educators and institutions need to ensure that the course materials, assignments, and other required documents can be accessed from mobile phones (Moore et al., 2018). Faculty members can also consider delivering the courses through asynchronous methods, allowing the students to access the materials at their own pace and with more efficient Internet usage.

There are several limitations to this study. The course LOs were not attached to the questionnaire, so the students might have difficulties when asked whether online learning can achieve knowledge, skills, or attitude LOs. However, the course LOs had been attached to the course specifications and also been shared by the lecturer during the first meeting of each course. The results might not be representative for other universities in Indonesia, as every university may have different experiences and policies of online learning implementation during this pandemic. Specific obstacles related to experiential learning for the pharmacist professional programme were not explored in this study, as the instrument was developed for all study programmes at our faculty.

Conclusion

In general, the faculty members and students perceived that online learning was not very effective and only considered to achieve some aspects of LOs. The unstable Internet signal and the higher cost of Internet packages were considered as major obstacles to online learning. This study provides the basis for the faculty to develop policies to improve the implementation of online learning.

As the COVID-19 pandemic is not yet over, it seems that online learning is the reasonable option for conducting learning activities. However, the learning activities and media should be carefully selected to ensure the achievement of all aspects of LOs.

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