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PERCEPTIONS OF COVID-19 ONLINE LEARNING STUDENTS BASED ON DREEM IN CLASS 2020 STUDENTS OF THE FACULTY OF MEDICINE UNIVERSITAS AIRLANGGA, SURABAYA, INDONESIA

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ABSTRACT

A learning environment is anything that can influence changes in attitudes in teaching and learning activities which will further influence the achievement of learning outcomes and student development. A researcher wants to carry out research on student perceptions regarding changes in the online learning environment due to Coronavirus Disease 19 (COVID-19) in the Faculty of Medicine, Universitas Airlangga. The study aimed to describe the perceptions of the students toward five aspects of an online learning environment. This study was a descriptive research using a quantitive approach and the sampling technique used simple random sampling with 167 medical faculty student class 2020. One hundred sixty-seven respondents' data were collected using the specific measurement tool Dundee Ready Education Environment Measure (DREEM) to measure the learning environment with univariate analysis. The results obtained from this research showed that the perception of students at the Faculty of Medicine, Universitas Airlangga towards the online learning environment is quite good with a score of 139.48. The result of this study indicated that the mean DREEM score was 139.48/200 (SD 22.76) is in the good category. Although the learning environment is in a good category, several points need to be improved so the faculty can increase the quality of the medical education.

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INTRODUCTION

Student academic accomplishment is influenced by both internal and external factors. The success of student learning activities can be measured by their academic performance. It is important to consider both types of factors when evaluating student achievement[1]. The learning environment is defined by various factors such as learning provisions and the applicable curriculum, peer association, and the environment of the related institution. The role of the learning environment becomes very crucial because

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the learning routine of students, especially medical students, is tiring and heavy. So the learning environment plays an essential role in student well-being[2].

The Coronavirus Disease 19 (COVID-19) pandemic has had many serious impacts in various fields, such as health, education, and socioeconomics[3]. The COVID-19 pandemic had brought significant changes to teaching and learning activities in Indonesian education. The closure of educational facilities due to COVID-19 had led to a shift in the learning system to online-based[4]. According to a survey at the Institute of Mental Health, Singapore, it was stated that there was strict control over the spread of the virus so the online learning system was implemented[5]. Online learning was implemented to replace offline learning[4]. Changes in the learning system online during the pandemic were different and new things were also felt by pre-clinical students at the Faculty of Medicine, Universitas Airlangga. These changes have both positive and negative impacts on the student learning environment and have a direct impact on academic achievement as well as student behavior. Understanding student perceptions of the online learning environment during the COVID-19 pandemic is crucial. Changes in the online learning environment can disrupt the effectiveness of teaching and learning events.

The Dundee Ready Education Environment Measure (DREEM) is a tool that can evaluate changes in the learning environment. DREEM has often been used in evaluating the learning environment in medical schools[5]. This study aimed to describe student perceptions of changes in the online learning environment during the COVID-19 pandemic among students of the Faculty of Medicine, Universitas Airlangga, Class of 2020.

MATERIALS AND METHODS

This was an observational study, in which the data were collected using a questionnaire in the form of an online platform (Google Forms). The type of research used was descriptive research with a cross-sectional approach. The sample of this study was representative of the entire population, consisting of the class of 2020 students totaling 167 students by using simple random sampling. Simple random sampling is a technique that ensures every individual in a population has an equal chance of being selected as a respondent[6]. This study used the DREEM questionnaire which is a tool for collecting information about the validated learning environment. This questionnaire has been translated into the Indonesian language and has been tested with a reliability value of 0.88. The reliability test was conducted again because some points were adjusted to the online learning process. The questionnaire was administered to the population included in the inclusion and exclusion criteria. All collected data were processed and analyzed using univariate analysis techniques. The ethics committee of the Faculty of Medicine at Universitas Airlangga approved this observational descriptive study on February 9, 2023, under the ethical clearance number 37/EC/KEPK/FKUA/2023.

RESULT

Subject Characteristics

The response rate of this study was 58% (a total of 167 out of 287 students overall). Of the 167 students who participated, 51 (30%) were male and 116

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(70%) were female. This ratio was derived from the overall population profile of a 30:70 male-to-female ratio.

DREEM Score

Table 1 shows the means and percentages of the DREEM global score and DREEM subscales in this study. The overall DREEM global score of the sample (n=167) was 139.48/200 (SD=22.67) which indicates that students overall had more positive perceptions of the learning environment at the Faculty of Medicine Universitas Airlangga.

Table 1. Global and Subscales DREEM Scores in College Students (n=167)

DREEM Subscales	Maximum Scores	Mean	SD	Percentage
SPoL	46	32.41	4.97	70%
SPoT	44	31.19	5.31	71%
SPAS	32	24.41	3.29	76%
SPoA	45	33.08	5.68	74%
SSSP	26	18.39	3.51	71%
Total Score	193	139.48	22.70	72%

Score of each Item of the DREEM Global Subscale

Table 2 shows some of the individual items of the DREEM based on the five subscales. Four question items with mean scores are below the mean score of two. The four question points come from the subscales of students' perception of the learning process, students' perception of the learning atmosphere, and students' perception of the social environment. Students perceived that online learning courses at the Faculty of Medicine, Universitas Airlangga emphasized long-term learning rather than short-term learning (1.59), online learning activities were also too faculty-centered (1.89), the learning atmosphere at the Faculty of Medicine, Universitas Airlangga did not motivate students (1.82) and student

accommodation was not comfortable (1.78). There are seven points with a score of more than three. Nine points with a mean score of more than three indicate that online teaching and learning activities can develop student competencies (3.26), online teaching and learning activities do not overemphasize factual information (3.08), teaching staff are knowledgeable enough (3.50), teaching staff do not scorn students (3.17), teaching staff are able to provide good feedback to students (3. 00), students are confident that they can get through this academic year (3.51), students feel well-prepared for the medical profession (3.18), students feel that last year's learning is a good preparation for this year's learning (3.15), students feel that the material to be learned feels relevant to a profession or career in the health field (3, 35), students feel that they have the opportunity to develop interpersonal skills (3.06), students feel comfortable socializing in online learning (3.09), students feel that they can concentrate well during online learning (3.07), students rarely feel bored with this study (3. 50), and students are confident of getting through this academic year (3.14), and students rarely feel lonely (3.09). Thirty-eight other points had mean scores between 2 and 3 indicating that they could be improved.

Points with a mean score of more than 3 were totally 15 points. The point with the highest mean score value is point 10 with a mean score value of 3.51 which indicates the superior aspect of the Faculty of Medicine online learning environment. Students felt confident that they can pass the academic year well. Point 29 shows a mean score value of 3.00, indicating that the teaching staff can provide feedback to students. The other 31 points with mean score values range between 2.0 and 3.0,

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indicating that improvements can be made to these points.

Scores for the 5 DREEM subscales indicate positive student perceptions. Four aspects scored below the mean score of 2.0 indicating problems in these areas, point 25 (activities emphasize learning factual information) had a score of with the lowest score (1.59) in the questionnaire. These results were obtained because this study focused on online learning implemented in the Class of 2020 and emphasized more on basic learning about medical science so that students still need to learn many other facts. Students also felt that online teaching and learning activities are too centered on teaching staff at point 48 with a value score of 1.89. Point 43 (The atmosphere during online learning was motivating) with a mean score of 1.82. Point 46 (My accommodation was pleasant) with a mean score of 1.78.

Table 2. DREEM Subscale Individual Item

Students' Perceptions of Learning (SPoL)

No	Item	Mean	SD
1	I am encouraged to participate in class	2.98	0.88
7	Online teaching and learning activities often provide stimulation	2.55	0.87
13	Online teaching and learning activities are centered around the student	2.63	0.82
16	Online teaching and learning activities help me develop my competencies	3.26	0.57
20	Online teaching and learning activities are well-focused	2.87	0.86
22	Online teaching and learning activities help develop my confidence	2.70	1.04
24	Time spent on online teaching and learning activities is well worthwhile	2.96	0.75
25	**Online teaching and learning activities emphasize learning factual information.**	3.08	0.62
38	I understand the learning objectives clearly	2.94	0.80
44	Online teaching and learning activities encourage me to be an active learner	2.96	0.68
47	Long-term learning is prioritized over short-term learning	1.59	1.00
48	**Online teaching and learning activities are too faculty-centered**	1.89	1.08
	Total Mean Score	32.41	
	Total Maximum Score	46	

Students' Perceptions of their Academic Skills (SPAS)

No	Item	Mean	SD
5	The study strategies that previously worked for me continue to be effective today	2.66	0.79
10	I believe that I can successfully complete this academic year	3.51	0.56
21	I am well-prepared for my profession	3.18	0.79
26	Last year's learning is a good foundation for this year's studies	3.15	0.78
27	I can memorize all the necessary information	2.40	0.85
31	I have learned a lot about empathy in this profession	3.26	0.63
41	Problem-solving abilities skills are well-developed	2.88	0.76
45	Most of the material I need to learn may be relevant to a career in the health sector.	3.35	0.58
	Total Mean Score	24.41	
	Total Maximum Score	32	

Students' Perceptions of the Learning Atmosphere (SPoA)

No	Item	Mean	SD
11	The atmosphere of online practical teaching and learning activities in the anatomy lab is relaxed	2.83	0.91
12	The schedule for online teaching and learning activities is well-organized	2.77	0.81
17	**Cheating behavior is a prevalent issue in this academic institution**	2.87	0.87
23	Online teaching and learning activities can enhance my confidence	2.92	0.84
30	I have opportunities to develop my interpersonal skills	3.06	0.74
33	I am comfortable socializing in online classes	3.09	0.55
34	The atmosphere during the seminar/tutorial is calm and informal	2.72	0.88
35	**I had a disappointing experience**	2.47	0.85
36	I can concentrate well	3.07	0.66
42	Enjoyment beyond the stress of studying	2.96	0.85

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No	Item	Mean	SD
43	The learning atmosphere motivates me as a student/learner	1.82	1.30
49	I am able to ask any questions I want	2.48	1.12
	Total Mean Score	33.09	
	Total Maximum Score	45	

Students' Perceptions of the Social Self-perception (SSSP)

No	Item	Mean	SD
3	There is a robust support system available for students who experience stress	2.29	0.98
4	**I am fatigued and unable to fully engage in my studies**	2.13	1.06
14	I do not often experience boredom with this study	3.50	0.55
15	I am confident that I can make it through this academic year	3.14	0.69
19	I have a good social life	2.46	1.12
28	I rarely feel lonely	3.09	0.81
46	My accommodation is pleasant	1.78	0.94
	Total Mean Score	18.39	
	Total Maximum Score	26	

Students' Perceptions of Teachers (SPoT)

No	Item	Mean	SD
2	Teaching staff are knowledgeable enough	3.50	0.59
6	Teaching staff are patient with students	2.78	0.80
8	**Teaching staff mocking students**	3.17	0.56
9	**Teaching staff are authoritarian**	2.79	0.77
18	The teaching staff demonstrates effective communication skills with patients	2.97	0.75
29	The teaching staff is capable of providing effective feedback to students	3.00	0.58
32	Here the teaching staff provide constructive criticism	2.97	0.71
37	Teaching staff provide examples that are clear to me	2.84	1.06
39	**Teaching staff showing anger in class**	2.40	0.96
40	The teaching staff is well-prepared to instruct their classes	2.38	1.10
50	The behavior of some students may cause frustration among the teaching staff	2.32	1.12
	Total Mean Score	31.12	
	Total Maximum Score	44	

Comparison of DREEM Perceptions Between Genders

Differences in scores can be found in the comparison of subscales between males and females with the results from the calculation of females having more positive perceptions than males. The overall mean score for women was 137.03/193 (SD 24.59) The overall mean score for men was 139.93/193 (SD 21.69). However, from the results of the calculation of the Mann-Whitney U test used to compare perceptions between men and women, it was found that there were no significant subscale scores between women and men (Table 3). In this study, females had a more positive perception of the learning environment than males.

Table 3. DREEM Global Score and DREEM Subscale by Gender

Subscale	Men (n = 51)	Women (n = 116)	P-Value
SPoL (Max 46)	32.31 (5.14)	32.50 (4.86)	NS
SPoT (Max 44)	30.90 (6.22)	31.14 (4.94)	NS
SPAS (Max 32)	23.90 (3.52)	24.50 (3.03)	NS
SPoA (Max 45)	31.92 (5.78)	33.36 (5.56)	NS
SSSP (Max 26)	18.00 (3.93)	18.43 (3.30)	NS
Maximum Value (193)	137.03 (24.59)	139.93 (21.69)	<0.05

DISCUSSION

The DREEM questionnaire presents medical students' perceptions of the learning environment quality at the Faculty of Medicine, Universitas Airlangga, and the DREEM questionnaire can indicate important areas or points in aspects of the

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learning environment that can be improved. The Faculty of Medicine, Universitas Airlangga received a DREEM Global Score of 139.48/200, indicating that students have a positive perception of the learning environment. Several other studies using DREEM also showed almost the same data. It was 135.58/200 at the University of Kebangsaan Malaysia, 117.9/200 at the University of Science Malaysia, and 99.6/200 in Iran[1]. In Indonesia there was a research on the learning environment at the Faculty of Nursing, Universitas Negeri Jember, which showed data close to the same number, namely 145.48[1]. The scores of 130-139/200 were obtained in three consecutive studies on the learning environment at the University of Indonesia from 2012 to 2015[7]. The mean score of 105/148 was found in pre-clinical students at the Faculty of Medicine, University of Lampung[8], while the mean value of the total score of 135.94 was obtained among pre-clinical students at the Faculty of Medicine, University of Mataram[9]. The median results of the DREEM questionnaire in the students of the Faculty of Medicine of Baiturrahmah University, Padang, Indonesia showed good results[10]. Ninety percent of the students of the Faculty of Medicine of the Islamic University Malang[11] and 206 out of 221 students of the Faculty of Medicine of Sriwijaya University had a good perception of their learning environment[11]. Most research showed that faculty of medicine students perceived the learning environment positively. However, this did not mean that all aspects of the environment were perfect. Regular monitoring and evaluation are necessary to continue improving the quality.

The results obtained with an average score of 1.59 in this study explained that the online learning implemented in the Class of 2020 was too focused on basic learning about medical science, so students still needed to learn many other facts. Learning medical science is an obligation of medical students. However, this is the most relevant reason for the increase in stress levels in medical students due to the lack of ability to accept and understand all the information that has been provided by the teaching staff[12]. Therefore, stress levels in medical students are usually higher in early semester[13]. Good self-adjustment to academic demands is needed by medical students to prevent stress[14]. Students also felt that the online teaching and learning activities are too centered on teaching staff at point 48 with a value score of 1.89. Point 43 (The atmosphere during online learning is motivating) with a mean score of 1.82. Point 46 (My accommodation was pleasant) with a mean score of 1.78. Medical education has a dynamic scope and will always change with the times, making the role of teaching staff must always develop. To face these challenges, effective innovations and creations are needed that can adjust developments in the world of medicine[15]. To find out the core problem of these two points, a different study is needed to discuss the cause of students' lack of motivation towards online learning and the cause of the unpleasant accommodation provided by the faculty for online learning. Issues regarding the implementation of online learning were not originally part of the routine learning curriculum in Asian countries. Online learning was applied suddenly during the pandemic and the order to implement social distancing. Online learning quality research is also conducted in some developing countries such as Ukraine. Online learning in Ukraine was

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successfully implemented. The study also showed concerns about the development of clinical training. Online learning research in Iran was conducted using university websites. Lecture materials in classical lectures in Iran are uploaded to the university's website and can be accessed by students easily.

Low scores on some items (item 25 and item 48) in the subscale of students' perceptions of the learning process could be due to many factors such as the limitation of materials available on the online platform so that students can only learn basic learning. An example is in learning medical action skills. In addition to academic theory, medical students are also required to be able to master medical action skills. However, since learning is done online, there is no guarantee that students can perform medical action skills correctly because lecturers are unable to monitor and provide examples of medical actions directly[16]. Online learning approach and system limit discussion. The online learning approach and system that restricts face-to-face discussion can cause students to feel that the learning is too focused on the teaching staff, resulting in low scores on student motivation due to the lack of engagement. The accommodations provided during online learning were also different so the low score was found in point 46. The learning content should be modified in such a way that it can adjust to the needs of students during online learning. In addition, not all students have good online learning accommodations. Students will enjoy online learning more if they are familiar with technological tools and internet access[17]. Problem-based learning teaching that is implemented virtually uses learning methods that utilize available technological means such as Canva application to assist students in applying tutorial learning charts. Utilization and modification of the e-learning website to provide materials needed by students. E-learning websites can be used to collect feedback from both faculty and students, improving the effectiveness of online learning methods[18].

The higher scores obtained by female students could indicate different learning styles and how female students feel about the learning environment compared to male students. In addition, gender equality could also be the cause of women's scores being higher than men's, so many of the women's answers had much more positive responses than men's and it could also be due to positive interactions between female lecturers or teaching staff and female students[19]. Research at the University of Kelantan, Malaysia, and Griffith University, Australia also carried out the same research assessing the same learning environment and conducting differences in perceptions between female and male genders but had the same results which were not significant.

CONCLUSION

Students at the Faculty of Medicine, Universitas Airlangga, generally have a positive perception of the online learning environment, particularly in the learning process (70% score, mean value 32.4). Their views on teachers are slightly better, with a 71% score and mean value of 31.19, indicating overall satisfaction. In terms of academic achievement, perceptions are strong at 76% (mean value 24.41), reflecting confidence in achieving good grades. The learning atmosphere also received a positive score of 74% (mean value 33.08), while the social environment

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scored 71% (mean value 18.39), suggesting that it is adequate but could be improved. Overall, the online learning environment for anatomy courses is categorized as good, with a total score of 139.48.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

ETHICS CONSIDERATION

This research received ethical clearance from KEPK Ethic Universitas Airlangga Hospital. With number 37/EC/KEPK/FKUA /2023 and date of approval on 9 February 2023.

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AUTHOR CONTRIBUTION

All authors have contributed to all processes in this research, including preparation, data gathering, analysis, drafting, and approval for publication of this manuscript.

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