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CORRELATION BETWEEN MEDICAL STUDENTS' PERCEPTION OF ONLINE LECTURE AND LEARNING MOTIVATION DURING THE LOCKDOWN: A SINGLE INSTITUTION PERSPECTIVE

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ABSTRACT

Background: Since it was first declared global pandemic by WHO in March 2020, Covid-19 has been triggered many unprecedented changes in education. This drastic change is likely to have an impact on students' perception and their scholastic motivation. Many previous studies have discussed students' perception towards online learning and students' learning motivation during this pandemic separately, but we found none discussed on their relationship. This study ventured to distinguish a possible correlation between perception of online learning and learning motivation among the students in Faculty of Medicine, Universitas Sumatera Utara, during the pandemic lockdown.

Methods: This was a correlative study with a cross-sectional design. Subjects were 286 students, selected from three academic years. Primary data was collected by using questionnaire. Data was analysed with Spearman's rank test and binary logistics to find true association by using IBM SPSS for Windows 26.0.

Results: Students' perception of online lecture were mostly towards favourable attitude, while students' learning motivation was leaning towards lower motivation. We found an interesting finding regarding the correlation of both variables. Descriptively, students found that they were easily lose focus during online session. Most of the students also perceived that online learning is less effective compared to face-to face learning.

Conclusion: Online learning faces hinderances, both technically and psychologically. Faculty and educators need to address these challenges to be able to promote better strategy in dealing with the difficulties.

Keywords: distance learning, medical education, motivation, attitude, Covid-19

PRACTICE POINTS

- Abrupt, unprecedented changes in education will affect students' perception.
- Students' perception of online learning can affect their learning motivation.
- To succeed in online learning, medical students need to have a high level of intrinsic motivation.

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INTRODUCTION

As Covid-19 declared global pandemic by World Health Organization (WHO) in March 2020, many unprecedented changes have occurred, including in education. Indonesia is not spared by the pandemic. To minimize the wider spread of the virus, education must switch from face-to-face to distance learning, and thus online learning took place.

Each student differs in understanding and processing information one obtains during the learning process.[1] The emergency transition in education will inevitably affect students' motivation. This is crucial considering that in medical education, students are required not only to understand knowledge, but also to master skills to solve health problems.[2] Motivation can affect what and how students learn.[1] Motivated students will likely succeed in the learning process.[3] Changes in learning methods to online delivery should eventually affect students' learning motivation.

Online learning requires learners' autonomy and self-direction, in which students might depend less to the interaction with teachers.[4] A qualitative study in Turkey demonstrated that online learning had a negative impact on students' motivation.[5] Challenges that has been catalysed during this pandemic include preparing and sustaining students and teachers motivation for the abrupt transition.[6] The show must go on, but it must go without compromising students' learning achievement. To be able to promote the best strategy in this challenging time, educators and institutions must be aware of how the students perceive this challenge, and how their motivation might be affected. Many studies have examined both variables separately, but we did not find any that discussed how students' perception of online lecture might affect their scholastic motivation.

Five months into the pandemic-related closures and thus online learning, the authors were interested to study of how the students in Faculty of Medicine USU perceived the distance course, as well as their learning motivation during the Covid-19 pandemic. We also attempted to examine the nature of relationship between both variables. We hope that this single institutional finding can be generalised into a wider perspective.

METHODS

Study design and population

This was an institutional-based correlative study using cross sectional design. Sample size was determined using correlation formula with the following assumptions: margins of error of 5% and 10%, correlation coefficient of 0.2 in two-tailed hypothesis, and 10% of non-response rate, resulting a sample size of 286 subjects. Subjects were acquired using stratified random sampling technique, derived from active students of batches 2017-2019 in Faculty of Medicine, USU. Students who were chosen from each batch were given link to a set of online questionnaires. Following ethical clearance from Ethical Review Board of USU (approval number 274/KEP/USU/2020) and the Dean's permission, students' response was collected from August to September 2020.

Data analysis

Students' perception of online learning and student's learning motivation were examined using validated authors-developed questionnaire, each of which consisted of 12 and 14 items, respectively. Face validation was assessed by an expert in medical education. The questionnaire was then pilot tested on 20 respondents for each item. The data was coded, in which negatively phrased questions were reverse coded. We identified underlying components by using principal component analysis (PCA) to group the items.

The questionnaire was structured in Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Students' response would be scored and categorized to two categories based on mean, in which good/high meant the score was over the mean, and poor/low meant the score was below the mean. We will report the findings on students' feedback descriptively.

We then also examined the association between students' perception as independent variable and students' learning motivation as dependent variable using Spearman's rank correlation coefficient (r). Probability was considered significant at $p < 0.05$. We also examined the true relationship

by acknowledging the confounding factors (age, gender, and academic year) by using binary logistics. The result will be presented as p, adjusted odds ratio (AOR), and 95% confidence interval (95% CI).

RESULTS AND DISCUSSION

All 286 randomly chosen students responded to our survey. Characteristics of the subjects described by age, gender, and academic year are shown in Table 1. The table shows that respondents were dominantly female, and slightly larger in the older group. We did not include first year students due to the concern of response bias since they were only active academically for a few weeks before the data collection.

Table 1. Distribution of characteristics of the respondents (N = 286)

Variable	n	%
Age		
<20 years	129	45,1
≥20 years	157	54,9
Gender		
Male	98	34,3
Female	188	65,7
Academic year		
2nd year	104	36,4
3rd year	88	30,8
4th year	98	32,9

In the subsequent analysis, students' academic year would be recategorized into two groups, i.e., lower study level (batches 2018 and 2019) and higher study level (batch 2017).

The validity and reliability of the five-Likert scale questionnaire were measured using Pearson correlation and Cronbach's Alpha (CA) respectively, and the result is as follow.

Table 2. Validity and reliability of the questionnaire

Questionnaire	Pearson correlation (r)	Cronbach's Alpha	Number of items
Students' perception towards online learning	0.563-0.702	0.882	13
Students' learning motivation	0.511-0.774	0.868	14

After PCA and CA, the items were rearranged, and the questionnaire was revised. Items on students' perception were grouped into three categories, whilst those of students' motivation was four. The final survey is seen in the following table.

Table 3. Items in the final questionnaire

Code	Student's perception towards online learning	Code	Students' motivation
	Perception on the effectiveness of online learning.		Motivation to study given materials.
P01	1. Online learning is more effective than face-to-face learning.	M01	1. I enjoy study most of the materials.
P02	2. Lectures, tutorials, and plenaries run well during online learning.	M02	2. I study materials before synchronous sessions.
P03	3. Online learning increases interactions between students and lecturers.	M03	3. I revisit the materials after the synchronous sessions by searching for relevant references.
	Perception on the ease of subject comprehension of online learning.		Motivation to enhance comprehension.
P04	4. Lecturers teach and facilitate the online sessions well.	M04	4. I learn with and from peers about things I do not comprehend.
P05	5. Subjects are easily understood during online learning.	M05	5. I ask the lecturers/mentors things I do not comprehend.

Code	Student's perception towards online learning	Code	Students' motivation
P06	6. Instructions and assignments are easier to understand in online learning compared to face-to-face learning.	M06	6. I keep it to myself when I do not understand the subject.
P07	7. I find online learning an interesting learning method.	M07	7. I study from other sources and references to understand the subject better.
Perception of self-efficacy of using online learning.		**Motivation to manage study time.**	
P08	8. I find myself easily distracted during synchronous sessions.	M08	8. I use my time effectively to study.
P09	9. I find myself more engaged and active during synchronous sessions.	M09	9. I prepare myself long before the exam to earn high marks.
P10	10. Online learning provides more conducive learning environment.	M10	10. I maximize my spare time to study.
		M11	11. I like to procrastinate.
P11	11. Face-to-face learning is better than online learning.	**Motivating factors.**	
P12	12. I can participate in online learning.	M12	12. I study more when I gain high mark.
		M13	13. Low mark demotivates me to study.
		M14	14. The online study routine demotivates me.

We present the descriptive findings on students' response in Table 4 and Table 5, in which the percentage of each item is provided. We grouped "strongly agree" and "agree" together as favourable attitude. "Strongly disagree" and "disagree" would also form one group as unfavourable attitude. Neutral was left as it is.

Table 4. Distribution of students' perception based on survey items (N = 286)

Code	SD (1)	D (2)	(1+2)	N (3)	A (4)	SA (5)	(4+5)
Perception on the effectiveness of online learning							
P01	18.8	38.5	56.4	32.9	8.4	2.1	10.5
P02	8.9	15.7	24.6	33.5	36.8	8.4	45.2
P03	16.1	36.4	52.4	29.7	12.6	5.2	17.8
Perception on the ease of subject comprehension of online learning							
P04	1.8	5.2	7.0	38.1	48.3	6.6	54.9
P05	2.8	19.6	22.4	43	30	4.5	34.5
P06	13.6	30.8	44.4	38.1	12.2	5.3	17.5
P07	10.1	22.7	32.8	36.7	22.4	8.4	30.8
Perception on self-efficacy of using online learning							
P08	3	11.5	14.5	24.5	35	26	61
P09	15	27	42	38.5	12.5	7	19.5
P10	9	17.8	26.8	23.4	33	16.8	49.8
P11	1.4	0.4	1.8	19.2	26.2	52.8	79.0
P12	2.4	6.0	8.4	37	42	12.6	54.6

SD: strongly disagree; D: disagree; N: neutral; A: agree; SA: strongly agree

Perception is the ability to interpret stimulus. Students' perception can reflect students' behaviour during online learning process throughout the Covid-19 pandemic. Table 4 shows some interesting findings, especially on the students' perception towards self-efficacy of the use of online learning. Most students admitted that they were easily distracted during synchronous meetings. The response was consistent with the subsequent question, in which only one fifth of the students felt engaged and active during synchronous sessions. They also mentioned that face-to-face learning is more effective and more favourable than online. However, they felt that they were still able to participate in online learning. Almost half of the students also agreed that online lecture provided more conducive learning environment.

A study in India revealed that graduate students also favour online learning due to its easy access of study resources, its flexibility and comfort related to space and time.[7] Students can learn at their own pace in their most convenient place.[8] However, online learning does also come with barriers. A national survey in United Kingdom shows that distraction and poor internet connection are some of the prominent obstacles during distance classes.[8]

Related to the feeling of equivalence between online and face-to-face learning, one study in France has reported the same finding. Most medical students opposed the equivalence of both approaches, although almost all of them agreed that online lecture is the appropriate way to deliver courses during this pandemic.[9]

Students admitted that they enjoyed studying the learning materials, although only few learned the subjects before synchronous meetings. To enhance understanding, most of the students were in favour of learning with and from peers, almost as much as studying from other sources and references. Most students claimed that they prepared long before exam. This response is in line with the response on the procrastination, in which most of them denied being procrastinator. Most students admitted that both high and low marks motivated them to study more. However, they felt demotivated by the study routine experienced during the lockdown.

Table 5. Distribution of students' motivation based on survey items (N = 286)

Code	SD (1)	D (2)	(1+2)	N (3)	A (4)	SA (5)	(4+5)
Motivation to study given materials							
M01	0.7	1	1.7	17.5	54.8	26	80.8
M02	6	18	24	52	17	7	24
M03	3	14	17	34.6	37.4	11	48.4
Motivation to enhance comprehension							
M04	0.3	3.5	3.8	17.5	47.2	31.5	78.7
M05	3.5	15	18.5	46.8	24.4	9.8	34.2
M06	3.2	23.4	26.6	35	33.2	5.2	38.4
M07	1.4	1	2.4	25.5	59.8	22.7	82.5
Motivation to manage study time							
M08	6	20	26	46	20	8	28
M09	1.7	4.5	6.2	27	38.1	28.7	66.8
M10	3.8	15	18.8	53.8	20.6	6.6	27.2
M11	25.8	35	60.8	23.8	10.5	4.9	15.4
Motivation factors							
M12	0.7	0.7	1.4	8.7	37.9	52	89.9
M13	45.1	37.4	82.5	10.5	2.5	4.5	7
M14	2.8	9	11.8	28	33.2	27	60.2

SD: strongly disagree; D: disagree; N: neutral; A: agree; SA: strongly agree

Motivated students are more likely to have higher academic performance.[3] Although some studies argue that intrinsic motivation plays a paramount role in the success of online learning,[10,11] yet other extrinsic factors are also influential, e.g. curriculum design, tutor's feedback, and learning environment that promotes student-cantered learning.[12] Boredom and routine are a devil that can definitely demotivate students, particularly in medical course. Some prominent predictors of boredom include prolonged, extensive lectures.[13]

Online teaching, as flexible as many studies might suggest, can also become extensive and congested, especially in medical course. This can lead to stress and burnout as early as the first year.[14] Hours of non-stop activity is not rare during the face-to-face learning. In the distance curriculum, there is still a good chance that this still occurs. Program manager needs to pay attention to this issue since it can be wearisome for both students and teachers/tutors.

Table 6. Distributions of students' perception towards online learning and learning motivation based on categories (N = 286)

Variable	n	%
Perception		
Good	165	57.7
Poor	112	42.3
Motivation		
High	137	47.9
Low	149	52.1

Online learning is a different learning concept and requires different skills in which educators have not developed much.[15] Table 6 shows that USU medical students' perceived online learning towards a favourable attitude. However, students showed different trend on learning motivation.

During the online learning process, students face various challenges. Insufficient internet quota and unstable internet networks are some of the technical hinderances.[8] In addition, students often lose focus during online session. Students are more likely distracted during online lecture than during face-to-face meeting.[16] Due to the distance locations, lecturers cannot directly monitor whether students are still engaged in the process or faded away. Lecturers have two important roles during online lecture, i.e., as teachers or material givers and as facilitators of the virtual classes.[17] In many institutions, including in our study location, lecturers are also hosting and technically supporting the process. This is undoubtedly an extensive task for the lecturers, that can easily divert them from giving sufficient attention to the students within the given synchronous time.

Interaction between students and lecturers must be built to improve communication and discussion during online learning. Learners might not respond appropriately during online discussion. Nevertheless, learning process should be centred on the learners.[2] Therefore, it is important that students possess high motivation during the online learning process, both intrinsic and extrinsic.

We examined bivariate analysis between student's perception of online learning and their learning motivation using Spearman's rank correlation test. The result is shown in the following table.

Table 7. Bivariate analysis between students' perception of online learning and students' learning motivation during the lockdown

Independent variables	Dependent variables	Spearman's correlation (r)	p value
Students' perception towards online learning	Students' learning motivation	-0.171	0.04

We continued with multivariate analysis by using binary logistics, in which we proposed several models based on the interactions of the main variable with the confounding factors (age, gender, and level of study). We found that none of the interactions was significant. We then run an alternative model in which we excluded all interactions from the equation. We compared the precision of both standard and alternative models and came up with the final model which had the highest precision. Table 8 shows the result with AOR and 95% CI.

Table 8. Multivariate analysis between students' perception of online learning and students' learning motivation during the lockdown

Independent variables	Dependent variables	p value	AOR (95% CI)
Students' perception towards online learning	Students' learning motivation	0.03	0.484 (0.299-0.784)

Both Table 7 and 8 show interesting findings. Since there are no previous studies assessing the correlation between perception and motivation, we hardly compare this result with other studies. Although weak, students' attitude towards online lecture had negative correlation with their motivation to learn. This means that motivated students did not necessarily in favour with the online learning experience. Table 8 shows that students with good perception is half as motivated as their counterpart.

We propose some possible explanations. Firstly, as online learning requires higher intrinsic motivation, motivated students might have had equipped with good intentions. Therefore, any challenge that was supposedly affect extrinsic motivation could be ignored. Secondly, since the survey was only five months into the pandemic, students were still interested due to their curiosity with the new method. If not preserved properly, this curiosity might be faded, and the students will be at risk at losing their interest altogether. Finally, students found online learning challenging and resource demanding, thus motivated students tried to maximize their effort within the boundaries, regardless their perception.

Still, we found it elating that more than half of the students still perceived the online learning favourable, although it does not seem to affect their motivation. Educators and faculty need to maintain students' good perception and keep it from fading away just because the excitement of the new method subsides.

Intrinsic motivation is proved to be dominant during online learning compared to face-to-face learning.[18] This is caused by the construct of challenge, control, curiosity, and fantasy within the context of online learning environments. The lack of face-to-face meeting with tutors and other students might trigger the feeling of isolation to some, especially those who prefer learning with peers. Challenge, curiosity, engagement, and control consistently emerge as salient considerations in examining the intrinsic motivating effect of e-learning activities and supporting technology.[19] The use of technology as tools in distance learning can induce curiosity and increase learning motivation, which is considered an important factor in achieving learning success, including during the online learning process.[20]

Educational institutions need to assess students' satisfaction level regularly in following the online learning process. A learning environment that is in accordance with the character and interests of students will generate a special learning spirit and motivation for students.[21] The learning environment plays a significant role in creating comfort, calmness and can motivate students in their learning.[22] This would promote intrinsic motivation, that arises when the activities carried out are enjoyable.

Although this study, supported with an adequate number of samples, has successfully portrayed students' perception towards online learning and its correlation with learning motivation, researchers are aware of the weaknesses of this study. There are some other aspects of perception and motivation that still need to cover, e.g., perceived obstacles in online learning, and other contributing factors associated with both variables.

CONCLUSION

There was a negative correlation between students' perception of online lecture and their scholastic motivation. We proposed three possibilities, i.e., internally motivated students might have ignored the extrinsic contributing factors, students were still interested with the new method, and due to the extensive effort and resources required in this method, motivated students were not bothered by their perception. Descriptive findings of this study agree with previous studies, in which distraction is often an obstacle found during online session. Most of the students also perceived that effectiveness of online learning is inferior compared to face-to-face learning.

RECOMMENDATION

Students are expected to be actively involved in the learning process. Faculty needs to address the challenges during this pandemic by adjusting and developing curriculum to make the learning process more engaging and motivating for both students and educators. Further studies in multicentre approach might need to cover the perception and motivation of students and other faculty members, particularly teachers and tutors.

COMPETING INTEREST

The authors declare that there are no competing interests related to the study.

AUTHORS' CONTRIBUTION

Laksmitasari Dewi – collecting data, analyzing data, and constructing the original manuscript.
Hemma Yulfi – analyzing data, peer reviewing and revising the manuscript.

LIST OF ABBREVIATION

Covid-19 : Coronavirus Disease 19
USU : Universitas Sumatera Utara
WHO : World Health Organization

REFERENCES

1. Schunk DH. *Learning Theories, An Educational Perspective.* 6 ed. Boston: Pearson Education, Inc.; 2012.

2. Cox K. Knowledge which Cannot be Used is Useless. *Medical Teacher.* 1987;9(2):142-154.

3. Wu H, Li S, Zheng J, Guo J. Medical students' motivation and academic performance: the mediating roles of self-efficacy and learning engagement. *Medical Education Online.* 2020;25(1, 1742964).

4. Hartnett MK. The Importance of Motivation in Online Learning. In: Hartnett MK, ed. *Motivation in Online Education.* Springer; 2016:5-32.

5. Meşe E, Sevilen Ç. Factors influencing EFL students' motivation in online learning: A qualitative case study. *Journal of Educational Technology & Online Learning.* 2021;4(1):11-22.

6. Chu TKF, Lin T-J, Lonka K. Motivating Online Learning: The Challenges of COVID-19 and Beyond. *The Asia-Pacific Education Researcher.* 2021;30(3):187-190.

7. Khan MA, Vivek, Nabi MK, Khojah M, Tahir M. Students' Perception towards E-Learning during COVID-19 Pandemic in India: An Empirical Study. *Sustainability.* 2021;13(57).

8. Dost S, Hossain A, Shehab M, Abdelwahed A, Al-Nusair L. Perceptions of medical students towards online teaching during the COVID-19 pandemic: a national cross-sectional survey of 2721 UK medical students. *BMJ Open.* 2020(10:e042378).

9. Motte-Signoret E, Labbé A, Benoist G, Linglart A, Gajdos V, Lapillonne A. Perception of medical education by learners and teachers during the COVID-19 pandemic: a crosssectional survey of online teaching. *Medical Education Online.* 2021;26(1919042).

10. Keller JM. First principles of motivation to learn and e3–learning. *Distance Education.* 2008;29:2:175-185.

11. Linnenbrink EA, Pintrich PR. Motivation as an Enabler for Academic Success. *School Psychology Review.* 2002;31(3):313-327.

12. Yukselturk E, Bulut S. Predictors for Student Success in an Online Course. *Educational Technology & Society.* 2007;10 (2):71-83.

13. Ubah JN. Predictors of boredom at lectures: Medical Students' experience. *Advances in Social Sciences Research Journal* 2018;5(1):91-95.

14. McKerrow I, Carney PA, Caretta-Weyer H, Furnari M, Juve AM. Trends in medical students' stress, physical, and emotional health throughout training. *Medical Education Online.* 2020;25(1, 1709278).

15. Jong PGd. Impact of Moving to Online Learning on the Way Educators Teach. *Medical Science Educator* 2020;30:1003–1004.

16. Szpunar KK, Moulton ST, Schacter DL. Mind wandering and education: from the classroom

to online learning. *Frontiers in Psychology* 2013;4(495).

17. Sriharan A. Teaching Online: Tips for Engaging Students in Virtual Classrooms. *Medical Science Educator.* 2020;30:1673–1675.

18. Rovai A, Ponton M, Wighting M, Baker J. A Comparative Analysis of Student Motivation in Traditional Classroom and E-Learning Courses. *International Journal on E-Learning.* 2007;6(3):413-432.

19. Shrof RH, Vogel DR, Coombes J, Lee F. Student E-Learning Intrinsic Motivation: A Qualitative Analysis. *Communications of the Association for Information Systems.* 2007;19(12):241-260.

20. RajaeeHarandi S. Effects of e-learning on Students' Motivation. *Procedia - Social and Behavioral Sciences.* 2015;181(11):423-430.

21. Juliawan IW. Persepsi Mahasiswa Bimbingan Konseling Universitas Mahadewa Indonesia terhadap Perkuliahan Daring sebagai Sarana Pembelajaran Selama Masa Pandemi Covid-19. *Widyadari Jurnal Pendidikan.* 2020;21(2):569-577.

22. Radovan M, Makovec D. Adult Learners' Learning Environment Perceptions and Satisfaction in Formal Education—Case Study of Four East-European Countries. *International Education Studies.* 2015;8(2).