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Readiness and Satisfaction with Online Learning Among Medical Students Undergoing Clinical Rotation During the COVID-19 Pandemic

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ABSTRACT

Online learning has become an important teaching method across academic programmes during the coronavirus disease 2019 (COVID-19) pandemic. Students' readiness and satisfaction with online learning and their association with selected variables were examined. A cross-sectional study was conducted among medical students who undergo clinical rotation during restricted movement orders when face-to-face teaching and learning are converted into an online method. Participants were recruited conveniently by inviting students from targeted clinical years to fill up the Online Learning Readiness Scale (OLRS) and E-Course Satisfaction Scale (ECSS) distributed via the digital platform. One-hundred and eighty-three (n = 183) students in the clinical posting of Years 3 (33.9%), 4 (32.2%), and 5 (33.9%) completed the survey voluntarily. The majority were female (n = 142, 78%), with a mean age of 22.85 [standard deviation (SD) = 1.19]. Overall, they reported high readiness and satisfaction with online learning. A positive moderate to good correlation existed between readiness and satisfaction ($r = 0.61$, $p < 0.001$). Readiness was significantly associated with age ($\beta = 1.12$, $p = 0.037$), type of clinical posting ($\beta = -4.09$, $p = 0.003$), online attendance ($\beta = 0.45$, $p = 0.008$), and learning duration ($\beta = 3.44$, $p = 0.036$). Only the duration of learning showed a significant linear relationship with satisfaction. Medical students reported high levels of readiness and satisfaction with online learning, despite heavily relying on this online learning mode to complete their clinical posting during the COVID-19 pandemic.

Keywords: *Online learning, Readiness, Satisfaction, Medical students, COVID-19*

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INTRODUCTION

Global information and technology innovation transforms communication in aspects of life such as personal, business, and education. Teaching and learning gradually shift from conventional classroom or field teaching mode to the online, virtual method. While it limits face-to-face interaction, online learning is flexible, where both learners and teachers have

more control over planning and managing their time and learning experiences. Online learning is efficient when a student is adequately prepared, communicates effectively with the instructor, and is technically skilful, motivated, and independent (1). Determining the readiness and satisfaction levels among students who must abruptly resume online learning due to situational crises such as the novel coronavirus disease 2019 (COVID-19) pandemic is vital to ensure a smooth-running and effective learning outcome (2).

The concept of readiness was first proposed by Warner et al. (3), who specified three essential aspects of online learners. They involve learners': (1) preferences on teaching format, which is online as opposed to face-to-face classroom instruction; (2) competence and confidence to use the internet and computer-mediated communication; and (3) ability to learn independently. The learners should be prepared in these aspects to be satisfied and successful in online learning.

Satisfaction refers to the learners' perceived value of a course they enrol in and the learning experiences (4). Various factors, including readiness, influence satisfaction with online learning. Higher educational institutions need to consider student satisfaction as one of the major determinants in delivering quality online learning (5) because higher satisfaction may lead to increased motivation, perseverance, and greater success outcomes (4).

Hung et al. (6) conducted a study on readiness for online learning involving 1,051 Taiwanese college students. They proposed five factors influencing online learning readiness: self-directed learning, motivation, computer/internet self-efficacy, learner control, and effective communication. The study found that students with higher grades were more prepared for online learning in all dimensions except computer/internet self-efficacy than lower-grade students. Topal et al. (2) investigated students' satisfaction and readiness for e-courses and the relationship between them. There was a positive significant relationship between students' satisfaction with e-courses and levels of readiness for the courses.

Kırmızı (7) examined the same variables using the Online Learning Readiness Scale (OLRS) as a primary data collection instrument. The findings among 84 English majoring students indicated that all the sub-dimensions of learner readiness in the OLRS correlated significantly with student satisfaction and success. Regression analysis indicated motivation as the most significant factor impacting learner satisfaction with online learning, while self-directed learning is the most crucial predictor of success (7).

When the world was affected by COVID-19 (8), the Malaysian government implemented stages of the Movement Control Order (MCO) started on March 2020 to prevent disease transmission. Mass gathering was prohibited, and various sectors were either closed or operated with limitations, i.e., restricted or no human physical contact and movement. Education is a sector that needs to be activated soonest possible (9) and is expected to adapt to the special requirement. Shifting the teaching from face-to-face to virtual, online mode is the only option for academic programmes during restricted MCO.

Medical students are among the most affected groups when online teaching becomes the only teaching mode. In Malaysia, Bachelor of Medicine is a five-year programme commonly divided into two phases. Phase I is pre-clinical consisting of two years (Years 1 and 2) of basic medical sciences teaching in the classroom. Phase II (Years 3 to 5) is the clinical years involving medical skills training, development, and consolidation of clinical clerkship in various medical disciplines and specialities (10). Major postings such as paediatrics, medicine, surgery, orthopaedics, obstetrics, and gynaecology last for 6 to 8 weeks and minor postings, including ophthalmology and otorhinolaryngology, take 2 to 4 weeks to complete.

Clinical training is conducted in the field, such as at paediatrics wards and clinics for paediatric posting, operation theatre during surgical posting, health clinics, or community settings. A face-to-face meeting between students, medical specialists and patients is critical to expose the former to experiential clinical skills and practice learning. However, due to the movement restrictions order throughout the country, the clinical teaching posting was also conducted via online means.

A recently published local study among medical students reported that some students did not have Wi-fi access or did not receive mobile broadband coverage at home when online learning became the only teaching option during the COVID-19 pandemic (11). Yet, their level of self-regulation in online learning was deemed satisfactory. The present study extends these findings by examining their readiness and satisfaction towards online learning, especially when they were supposed to undergo clinical-based postings at the hospital. The students were prohibited from entering the campus or hospital during the MCO, so clinical posting had to be conducted through an online learning platform.

This study opted to focus on students who were scheduled to complete their clinical posting assuming they could be the most affected group due to essential clinical skills teaching and practices having to be delivered online. Learning clinical skills online from home or a hostel could be challenging for the students. Therefore, the readiness and satisfaction of these students are worth examining to plan for effective teaching and learning outcomes. This information should be useful as online learning is becoming the primary teaching platform, or blended with conventional methods, in many study fields beyond the pandemic era.

METHODS

A cross-sectional study was conducted approximately nine months following the execution of the MCO, which was known as the recovery phase. The sampling population consisted of 715 students enrolled in one of the medical schools in Peninsular Malaysia when the study was conducted. Out of this number, 57% (n = 408) were identified as the targeted participants, i.e., Years 3, 4, and 5 students undergoing clinical posting. Before the COVID-19 pandemic, all teaching and learning activities were conducted on campus via the face-to-face method, relying on practical sessions and physical patient contact in the specific field. However, following the MCO, all academic activities, including lectures, tutorials, and clinical examinations, were shifted to online learning until the recovery phase of MCO (RMCO). This study compared students who entered paediatric as compared to other rotations in view of a novel approach of teaching during the pandemic time. Subsequently, the final-year medical students were allowed to return to the campus in multiple phases. The sample size was calculated using single mean estimation, and the Pearson correlation estimation formula recommended the optimum sample size of 179 after considering 10% of the dropout or non-response rate of the participants.

OLRS was employed to determine the level of readiness among medical students towards online learning. This scale consisted of 18 items from 5 dimensions, including 5 items for self-directed learning, 4 for learning motivation, 3 for computer/internet self-efficacy, 3 for learner control and 3 for online communication self-efficacy (6). The responses used a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Initially developed in Taiwan, the validated English version revealed a reliable and good Cronbach's alpha of 0.91 when tested among students in a local medical and health campus (12).

The E-Course Satisfaction Scale (ECSS) was used to examine the satisfaction levels towards online learning. The original scale comprised of 35 items making up 5 dimensions with 8 items for materials used and communication tools, 4 items for student-instructor interaction, 8 items for instructional environment design, 6 items for attitude towards e-learning, and 9 items for course content and teaching process (13). The responses used a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The original Turkish scale has undergone systematic translation procedures using forward and backward methods resulting in the face validity index (FVI) of 0.78 with an overall Cronbach's alpha value of 0.95 after removing 3 items (Q24, Q26, and Q31) due to negative and low corrected item-total correlation when it was tested in the local setting (14). Permission to use the scales was obtained from the authors prior to data collection.

The levels of readiness and satisfaction were calculated according to the recommended equation provided by the authors of the scales (2). Each domain's readiness or satisfaction rate would equal to the mean scores divided by the highest possible scores and multiplied by 100. If the rate obtained is 49% or lesser, it would be regarded as a low level while the moderate level would be between 50% and 69%, and the high level would be for the rate over 70% (2).

Sociodemographic data were gathered that included age, gender, year of study, posting during the study period, family household income (15), online classroom attendance, internet stability during online teaching, frequency of internet use (per week), and duration of online learning (per day).

Potential participants were conveniently approached via research invitation messages sent through students' group email and WhatsApp. A Google Form link containing the survey was distributed to the batch leaders from early December 2020 to the end of January 2021, who shared it with their batch mates. Participation was entirely anonymous and voluntary. Consent was considered when the participants agree to answer the survey. A weekly reminder was sent to the batch leader to enhance the response rate. Incomplete responses were excluded from the analysis.

Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM Corp., Armonk, NY, US) was used to analyse the data. Descriptive analysis was performed to describe the participants' demographic characteristics, readiness, and satisfaction levels towards online learning. Continuous or numerical data were described in mean and standard deviation (SD), while categorical data were presented in frequencies (n) and percentages (%). Pearson correlation was used to measure the correlation between readiness and satisfaction, which was reported as correlation coefficient (r). Regression analysis (simple and multiple linear regression) was implemented to analyse the significant linear relationship between the independent variables with the total score of OLRS (readiness) and ECSS (satisfaction). Variables from the sociodemographic characteristics were initially entered in the simple linear regression to assess the individual relationship with readiness and satisfaction scores. Factors with a p-value of less than 0.25 or clinically significant were selected and entered for the multiple linear regression analysis. Stepwise, forward and backward methods were applied. The results were presented as crude β [95% confidence interval (CI)] and adjusted crude β (95% CI). For the final model, factors with p-value < 0.05 were chosen as statistically significant. The R^2 of the final model was checked for model fitness. A higher R^2 value suggests a better fit of the regression model.

RESULTS

Sociodemographic Information

Out of 408 participants invited, 190 responded to the survey resulting in a response rate of 46.5%. Seven incomplete responses were omitted, leaving 183 valid responses (n = 183). Table 1 summarised participants' sociodemographic information. The majority were female (77.6%), had good internet connection during online learning (55.2%), spent more than 15 hours a week surfing the internet (73.2%) and had online learning more than 3 hours daily (57.4%). The participants were almost equally distributed in number based on the year of study, i.e. Years 3, 4, and 5 was 33.9%, 32.2%, and 33.9%, respectively.

Table 1: Sociodemographic characteristics of the participants (n = 183)

Variable	n (%)
Age (years)	22.85 (1.19)[a]
Gender	
Male	41 (22.40)
Female	142 (77.60)
Year of study	
3	62 (33.90)
4	59 (32.20)
5	62 (33.90)
Current posting	
Paediatrics	54 (29.50)
Other posting	129 (70.50)
Family household income	
B40	67 (36.60)
M40	80 (43.70)
T20	36 (19.70)
Online class attendance	98.55 (3.73)[a]
Internet status during online learning	
Poor	4 (2.20)
Medium	51 (27.90)
Good	101 (55.20)
Very good	27 (14.80)
Frequency of internet use (hour/per week)	
1–5	2 (1.10)
6–10	25 (13.70)
11–15	22 (12.00)
>15	134 (73.20)
Duration of online teaching (hour/per day)	
1–2	36 (19.70)
2–3	42 (23.00)
>3	105 (57.40)

Note: [a]Mean (SD).

Level of Readiness Towards Online Learning

The students' level of readiness to embark on online learning appeared to be high in all dimensions except learners' control domain. Table 2 shows the mean, SD, percentage of readiness, and evaluative levels of readiness in five domains of online learning. Computer or internet self-efficacy contributed to the highest readiness level (83%), while the lowest was the learner control (62%), which was rated as moderately prepared. The overall level of readiness was high, accounting for 73%.

Levels of Satisfaction Towards Online Learning

The mean, SD, percentage, and evaluative level of students' satisfaction on five dimensions related to online learning was presented in Table 3. Overall satisfaction contributes to 71%. Three out of five satisfaction dimensions were at a high level except for the materials used and communication tools (69%) and attitude towards e-learning (60%).

Table 2: OLRS scores (n = 183)

Dimension	Mean	SD	Readiness (%)	Level
Computer/internet self-efficacy	12.43	1.59	83	High
Self-directed learning	17.66	3.32	71	High
Learner control	9.24	2.09	62	Moderate
Motivation for learning	15.28	2.26	76	High
Online communication self-efficacy	10.72	2.35	71	High
Overall readiness	65.32	8.73	73	High

Table 3: ECSS scores (n = 183)

Dimension	Mean	SD	Readiness (%)	Level
Materials used and communication tools	27.66	4.83	69	Moderate
The instructor-student interaction	14.32	2.55	72	High
Instructional environment design	30.44	3.61	76	High
Attitude towards e-course	12.01	3.31	60	Moderate
Course content and teaching process	28.49	3.49	71	High
Overall satisfaction	112.90	13.58	71	High

Correlation Between Readiness, Satisfaction, and Their Sub-domains Towards Online Learning

Pearson correlation coefficient showed a statistically significant positive with moderate to good correlation (r = 0.61, p < 0.001) between the readiness and satisfaction level among the participants towards online learning. It was observed that the higher the readiness, the higher the satisfaction would be, and vice versa.

When measuring the correlation between the five domains of readiness and the five domains of satisfaction level, the correlations ranged from –0.02 to 0.53. A significant positive moderate to good correlation was found between the OLRS motivation for learning with ECSS materials used and communication tools (r = 0.53), course content and teaching process (r = 0.47), and student-instructor interaction (r = 0.47).

In addition, the ECSS course content and teaching process was correlated significantly with motivation for learning (r = 0.47), self-directed learning (r = 0.38), and online communication self-efficacy (r = 0.37). The detailed results of the findings are summarised in Table 4.

Factors Associated with Readiness and Satisfaction Level

Regression analysis identified four factors with a significant linear relationship with the student's readiness for online learning during the COVID-19 pandemic. These factors were age (β = 1.12, p = 0.037), type of posting during the study period (β = –4.09, p = 0.003), online classroom attendance (β = 0.45, p = 0.008) and duration of online learning (β = 3.44, p = 0.036). The readiness level was higher among those undergoing Paediatric posting than those undergoing other posting during the study period (β = –4.09). Those with online learning duration of more than 3 hours reported higher readiness scores by 3.44 compared to those who had 1 to 2 hours of online teaching per day. The model explained 12.9% of variations in total OLRS scores in the study population, as stated in Table 5.

Table 4: Correlation between readiness domains and satisfaction domains

Scale/ domain		ECSS				
		MUCT	SII	IED	ATEL	CCTP
OLRS	CIS	0.11	0.17*	0.20**	–0.02	0.09
	SDL	0.41**	0.43**	0.33**	0.27**	0.38**
	LC	0.41**	0.37**	0.22**	0.36**	0.33**
	MFL	0.53**	0.47**	0.35**	0.39**	0.47**
	OCS	0.42**	0.31**	0.30**	0.39**	0.37**

Notes: CIS = computer/internet self-efficacy; SDL = self-directed learning; LC = learner control; MFL = motivation for learning; OCS = online communication self-efficacy; MUCT = material used and communication tools; SII = student-instructor interaction; IED = instructional environment design; ATEL = attitude toward e-learning; CCTP = course content and teaching process. *p < 0.05, **p < 0.01.

Table 5: Simple and multiple linear regression for factors associated with readiness (n = 183)

Variable	SLR[a]			MLR[b]		
	Crude β[c]	95% CI	*p*	Crude β[d]	95% CI	*p*
Age (years)	0.74	−0.33, 1.81	0.17	1.12	0.07, 2.18	**0.037**
Gender						
Male	–	–				
Female	−0.03	−3.09, 3.04	0.98			
Year of study						
3	–	–				
4	−2.20	−5.29, 0.90	0.16			
5	1.61	−1.45, 4.67	0.30			
Current posting						
Paediatrics						
Other posting	−4.01	−6.74, −1.27	**0.004**	−4.09	−6.80, −1.39	**0.003**
Online classroom attendance	0.54	0.20, 0.87	**0.002**	0.45	0.18, 0.78	**0.008**
Family household income						
B40	–	–				
M40	0.76	−2.09, 3.61	0.60			
T20	−1.79	−5.34, 1.77	0.33			
Internet status during online learning						
Poor	–	–				
Medium	−2.38	−11.2, 6.42	0.59			
Good	1.52	−7.12, 10.16	0.72			
Very good	2.69	−6.38, 11.77	0.55			
Frequency of internet use (hour/per week)						
1–5	–	–				
6–10	1.76	−10.98, 14.50	0.78			
11–15	0.05	−12.76, 12.85	0.99			
>15	1.47	−10.88, 13.82	0.8			

(*Continued on next page*)

Table 5: (*Continued*)

Variable	SLR[a]			MLR[b]		
	Crude β^c	95% CI	*p*	Crude β^d	95% CI	*p*
Duration of online teaching (hour/per day)						
1–2	–	–		–	–	
2–3	3.92	0.05, 7.79	**0.04**	2.17	–1.62, 5.96	0.25
>3	3.88	0.59, 7.17	**0.02**	3.44	0.23, 6.64	**0.03**

Notes: [a]Simple linear regression; [b]Multiple linear regression; [c]Crude regression coefficients; [d]Adjusted regression coefficients; R^2 = 0.068. No interaction or multicollinearity was found. Model assumptions were met.

Regarding the satisfaction level, the duration of online learning was the only factor with a significant linear relationship. Compared to the group with 1 to 2 hours, those with 2 to 3 hours and more than 3 hours of online learning per day had higher satisfaction scores of 7.60 and 5.14, respectively. The model explained 6.8% of variations in total ECSS scores in the study population, as described in Table 6.

Table 6: Simple and multiple linear regression for factors associated with satisfaction (n = 183)

Variable	SLR[a]			MLR[b]		
	Crude β^c	95% CI	*p*	Crude β^d	95% CI	*p*
Age (years)	0.52	–1.15, 2.19	0.54			
Gender						
Male	–	–				
Female	2.68	–2.07, 7.34	0.27			
Year of study						
3	–	–				
4	–2.67	–7.56, 2.21	0.28			
5	–1.11	–5.94, 3.71	0.64			
Current posting						
Paediatrics	–3.91	–8.23, 0.40	0.007	–3.10	–7.38, 1.17	0.15
Other posting						
Online classroom attendance	0.52	0.20, 0.87	0.05	0.37	–0.16, 0.90	0.17
Family household income						
B40	–	–				
M40	–0.78	–5.24, 3.68	0.73			
T20	–1.69	–7.26, 3.87	0.54			

(*Continued on next page*)

Table 6: (*Continued*)

Variable	SLR[a]			MLR[b]		
	Crude β[c]	95% CI	*p*	Crude β[d]	95% CI	*p*
Internet status during online learning						
Poor	–	–				
Medium	5.23	−8.59, 19.1	0.45			
Good	9.83	−3.74, 23.4	0.15			
Very good	8.62	−5.64, 22.9	0.23			
Frequency of internet use (hour/per week)						
1–5	–	–				
6–10	11.14	−8.61, 30.89	0.26			
11–15	12.59	−7.26, 32.44	0.21			
>15	10.07	−9.08, 29.22	0.30			
Duration of online teaching (hour/per day)						
1–2	–	–		–	–	
2–3	8.83	2.85, 14.8	**0.004**	7.60	1.54, 13.6	**0.014**
>3	5.84	0.76, 10.9	**0.024**	5.14	0.04, 10.25	**0.048**

Notes: [a]Simple linear regression; [b]Multiple linear regression; [c]Crude regression coefficients; [d]Adjusted regression coefficients; R^2 = 0.068. No interaction or multicollinearity was found. Model assumptions were met.

DISCUSSION

This study examines the readiness and satisfaction level towards online learning among medical students undergoing clinical posting during the COVID-19 pandemic and investigates their correlation with selected factors. Whilst the majority of the respondents were female, they are equally distributed among three years, i.e., Years 3, 4, and 5, suggesting a good representative sampling of clinical years. Most of them are from moderate to high socioeconomic status, explaining that most could afford personal computers and subscribe to reliable internet providers for online learning. This socioeconomic condition would also indirectly influence their knowledge and exposure to computer skills, consequently, their readiness towards online learning. Most participants were online more than 15 hours weekly, which may have also contributed to upskilling and mastering online learning. Kayaoğlu and Dağ Akbaş (16) investigated online learning readiness among first-year medical students and was notified that students are ready to adopt online learning as the internet and computer self-efficacy improve.

This study shows the readiness level among participants towards online learning was high in all dimensions except for learner control. The finding is consistent with a study among Turkish university students (2) which indicated they are highly prepared in all aspects of

readiness to learn online. This Turkish study was conducted during a non-pandemic era, whereby online teaching is a planned, alternative teaching mode. Looking at the high readiness index, the present population appears to adapt well to online learning despite the implementation being abrupt and non-optional. These participants are a generation who are exposed to advanced information technology (17). They are familiar with many online applications and quickly adapt to necessary computer skills; thus, online learning does not impose many problems during the COVID-19 pandemic.

Meanwhile, the dimension of learner control is reported to be at a moderate level. Learners and lecturers have expressed major issues during the online learning such as internet connectivity and lack of technology awareness which have interfered with the overall learning. Teachers also struggled with similar issues such as adapting to the online tools and technologies (18). Whilst students seemed to be ready for online learning, supervision and guidance from lecturers are needed to accommodate the learning process.

Sub-domains analyses indicated the more materials used and communication tools applied, the higher the learner's control. This current result is consistent with previous findings that noted elements such as individual factors, accessibility to the system, close submission deadline and time management may affect learners' control, thus their readiness (16). The learner motivation from the readiness sub-dimension is the one that influences satisfaction most, as proposed by Kırmızı (7). Online learning can be improved by provision of institutional technical support, captivating educational resources, and training to the learners and lecturers (18).

Partcipants' level of satisfaction towards online learning is high, which could be due to effective teaching delivery using new methods that can fulfil the goals despite the pandemic. It is important to ensure continuous effective learning and safety of the learners during the pandemic outbreak. Effective teaching delivery should create the opportunity for tele-mentoring of students by facilitating a two-way conversation through the adult learning process and assessment. Synchronous virtual platforms allow live interaction and feedback between teachers and students. Sometimes, blended learning approach by mixing both traditional and online teaching would be effective to achieve an expected learning outcome (19). Communication tools and attitudes towards e-learning were reported at a moderate level. Ozkan and Koseler (20) suggested a positive relationship between learners' attitudes and satisfaction with online learning. The present study further noted that student-instructor interaction satisfaction is highly correlated with students' motivation for learning, which is part of their readiness to embrace online learning.

Multiple factors contribute to the satisfaction level among participants towards online learning, such as students' readiness, attitude and perception towards online learning, user-friendly and well-design interactive learning environment, appropriate course materials and contents and skills and attitude of the instructors in handling the online learning (21). Learners who believe online learning is an effective tool will display a positive attitude towards online learning (22). Their satisfaction towards online learning is a very important marker as it can directly affect the students' achievement in their academic performance.

There was a significant positive correlation between readiness and satisfaction. Consistent with our hypothesis, more prepared students are also more satisfied, and vice versa, when online learning is concerned. As a result, their performance can be better in the examination. Levy determined learners' satisfaction is an important indicator for dropout in online courses. In fact, the level of satisfaction among learners who leave the education system seems to be lower than those who are successful (23).

This study identified factors such as age, type of posting, online classroom attendance, and duration of online learning to have a direct relationship with readiness. As the age and online classroom attendance increase, the readiness level also increases proportionately. The readiness level among participants who underwent paediatric posting during the study period seems higher than those in non-paediatric posting. Most paediatric lecturers have had experience using online platforms for various purposes before the COVID-19 pandemic. Thus, despite the need to abruptly shift to online teaching, they might have delivered their teaching efficiently and satisfactorily to the students. Some enthusiastic paediatricians have gone beyond didactic teaching and prepared new teaching materials so clinical skills can still be effectively taught online. For example, one paediatrician broadcasted a live event when he conducted a clinical interview and examination of a child so that the class could appreciate the process as they were occurring in a natural situation. Participants who undergo more than 3 hours of online learning daily reported higher readiness levels since they have much more exposure and confidence than those who did online learning intermittently.

With regard to satisfaction, the duration of online learning was the only factor with a significant relationship. In this study, the duration of online learning referred to synchronous teaching when the lecturers were available online at the scheduled time. The longer exposure one is having to online learning, the better they could resolve issues related to the challenges in online learning. In short, the longer the duration of online learning, the higher the satisfaction level will be. This finding suggested that despite the advancement of technology where a person does not need to meet face-to-face for learning to happen, students feel more satisfied when they see their lecturers online during teaching. They may feel more connected as they spend more time with the lecturers virtually, and more learning issues could be discussed and managed.

There are a few limitations of this study. The findings from a single setting that targeted specific groups of students undergoing clinical posting may not represent students' readiness and satisfaction in general medical programmes. Whilst readiness and satisfaction towards online learning have been examined, it is equally important for the medical school to scientifically examine how clinical teaching can be delivered effectively via online mode. This includes exploring a teaching method so that clinical skills such as interviews, examinations, and communication can be delivered effectively online. The non-probability sampling method may limit the generalisability of the study findings. Finally, future research can examine the relationship between instructor readiness and student satisfaction, online clinical skills teaching and imparting a new dimension to clinical skills using virtual platforms.

CONCLUSION

This study found a high level of readiness and satisfaction among medical students undergoing clinical posting towards online learning during the COVID-19 pandemic. Medical students are sufficiently ready, competent, and satisfied with online learning being a new mode of learning during the COVID-19 pandemic. Good technical support from the students, teachers and institution is equally important to ensure a sustainable, achievable, and compelling new norm of learning methods. These findings may guide faculty development planning and policymaking, especially in promoting more socially inclusive online learning and developing future online courses or programmes.

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ETHICAL APPROVAL

Ethical approval to conduct the study was obtained from The Human Research Ethical Committee Universiti Sains Malaysia (USM/JEPeM/COVID19-46).

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