READINESS AND SATISFACTION OF THE ONLINE LEARNING AMONG MEDICAL STUDENTS UNDERGOING CLINICAL ROTATION DURING COVID-19 PANDEMIC

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DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER IN MEDICINE

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THE PRELIMINARIES

ACKNOWLEDGEMENT

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LIST OF TABLES

LIST OF ABBREVIATIONS AND NOMENCLATURES

HUSM	Hospital Universiti Sains Malaysia
WHO	World Health Organization
COVID-19	Corona Virus Disease 19
MCO	Movement Control Order
RMCO	Recovery Movement Control Order
OLRS	Online Learning Readiness Scale
ECSS	E-Course Satisfaction Scale
IIUM	International Islamic University Malaysia
FVI	Face Validity Index
SD	Standard Deviation
CI	Confidence Interval
SPSS	Statistical Package for the Social Sciences
SLR	Simple Linear Regression
MLR	Multiple Linear Regression

ABSTRAK

Pembelajaran secara atas talian telah menjadi teknik pengajaran yang penting dalam program akademik semasa pandemik COVID-19. Kami telah menilai tahap kesediaan dan kepuasan mahasiswa terhadap pembelajaran secara atas talian dan hubung kaitannya dengan beberapa faktor yang terpilih. Sebuah kajian keratan rentas telah dilaksanakan di kalangan mahasiswa perubatan yang sedang menjalani rotasi klinikal ketika tempoh perintah kawalan pergerakan, di mana kaedah pembelajaran dan pengajaran secara bersemuka telah ditukarkan kepada pembelajaran secara atas talian. Peserta telah direkrut secara mudah dengan cara mempelawa sasaran kumpulan mahasiswa untuk mengisi borang kaji selidik Online Learning Readiness Scale (OLRS) dan E-Course Satisfaction Scale (ECSS) yang telah diagihkan melalui medium digital. Sejumlah 183 orang mahasiswa perubatan dari fasa klinikal tahun 3 (33.9%), tahun 4 (32.2%) dan tahun 5 (33.9%) telah mengisi borang kaji selidik secara sukarela. Kebanyakan peserta adalah mahasiswa wanita (n=142, 78%) dengan purata umur 22.85 tahun. Secara keseluruhan, tahap kesediaan dan kepuasan mereka terhadap pembelajaran secara atas talian adalah tinggi. Terdapat hubung kait positif yang bersifat sederhana ke baik di antara tahap kesediaan dan kepuasan ($r=0.61$, $p < 0.001$). Kesediaan mempunyai hubung kait yang bermakna dengan faktor umur ($\beta = 1.12$, $p = 0.037$), jenis posting klinikal ($\beta = -4.09$, $p = 0.003$), kehadiran kelas pembelajaran atas talian ($\beta = 0.45$, $p = 0.008$), dan durasi pembelajaran atas talian ($\beta = 3.44$, $p = 0.036$). Sebaliknya, hanya durasi pembelajaran atas talian sahaja yang mempunyai hubungan langsung yang bermakna dengan kepuasan. Mahasiswa perubatan menunjukkan tahap kesediaan dan kepuasan yang tinggi terhadap pembelajaran secara atas talian meskipun harus bergantung sepenuhnya kepada kaedah pembelajaran secara atas talian ini untuk menyempurnakan rotasi klinikal semasa pandemik COVID-19.

Kata Kunci: *pembelajaran secara atas talian, kesediaan, kepuasan, mahasiswa perubatan, COVID-19*

ABSTRACT

Online learning has become an important teaching method across academic programs during COVID-19 pandemic. We examined students' level of readiness and satisfaction on online learning and their association with selected variables. A cross-sectional study was conducted among medical students who undergo clinical rotation during restricted movement order, when face-to-face teaching and learning is converted into online method. Participants were recruited conveniently by inviting students from targeted clinical years to fill up Online Learning Readiness Scale (OLRS) and E-Course Satisfaction Scale (ECSS) distributed via digital platform. One-hundred and eighty-three (N=183) students in clinical posting of year 3 (33.9%), 4 (32.2%), and 5 (33.9%) completed the survey voluntarily. Majority was female (n=142, 78%) with a mean age of 22.85. Overall, they reported high level of readiness and satisfaction on online learning. There was positive moderate to good correlation 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 duration of learning showed significant linear relationship with satisfaction. Medical students reported high levels of readiness and satisfaction on online learning, despite heavily relying on this online learning mode to complete their clinical posting, during COVID-19 pandemic.

Keywords: *online learning, readiness, satisfaction, medical students, COVID-19*

CHAPTER II

THE TEXT

2.1

Section A

Introduction

INTRODUCTION

Global information and technology innovation results in communication transformation in aspects of life such as personal, business, and education. Teaching and learning gradually shift from conventional classroom or field teaching mode to 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 student is adequately prepared, communicates effectively with the instructor, technically skilful, motivated, and independent (1). Determining the readiness and satisfaction levels among students who have to abruptly resume into online learning due to situational crisis such as Corona Virus Disease 19 (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 important aspect in online learners. They involve learners' (i) preferences on teaching format which is online as opposed to face-to-face classroom instruction; (ii) competence and confidence to use internet and computer-mediated communication; and (iii) 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 on a course they enrol and the learning experiences (4).

Satisfaction on online learning is influenced by various factors including readiness. Higher educational institutions need to consider student satisfaction as one of the major determinant 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 1051 Taiwanese college students. They proposed five factors influencing online learning readiness including self-

directed learning, motivation, computer/internet self-efficacy, learner control and effective communication. The study found that students with higher grade were more prepared for online learning in all dimensions except in computer/internet self-efficacy as compared to lower grade students.

Topal et al. investigated the level of satisfaction and readiness of students on e-courses and the relationship between them (2). There was a positive significant relationship between students' satisfaction with e-courses and levels of readiness for the courses ($p < 0.01$).

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

When the world was affected by COVID-19 (8), Malaysia government implemented stages of 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 – restricted or no human physical contact and movement. Education being a sector 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 programme during restricted movement control order.

Medical students are one of the most affected groups when online teaching becoming the only mode of teaching. In Malaysia, Bachelor of Medicine is a five-year programme commonly divided into two phases. Phase I is a pre-clinical consists of two years (Year 1 and 2) basic medical sciences teaching taking place in classroom. Phase II (Year 3-5) is clinical years involves medical

skills training, development and subsequently consolidation of clinical clerkship in various medical disciplines and specialities (10). Major postings such as paediatrics, medicine, surgery, orthopaedics and obstetrics and gynaecology last for 6-8 weeks and minor postings including ophthalmology and otorhinolaryngology take 2-4 weeks to complete. Clinical training is conducted at the field – such as paediatrics wards and clinic for paediatric posting, operation theatre during surgical posting, health clinics, or community setting. Face-to-face meeting between students, medical specialists and patients is critical to expose the former with experiential clinical skills and practices learning. However, during the MCO, clinical posting too had to be conducted through online learning platform because students were prohibited from entering the campus or hospital.

To the best of our knowledge, there is no study investigating readiness and satisfaction level among medical students towards online learning during COVID-19 pandemic in Malaysia. We opted to focus on students who were scheduled to complete their clinical posting assuming they could be the mostly affected group due to essential clinical skills teaching, and practices have to be delivered online. Learning clinical skills online from home or hostel could be challenging for the students, due to multiple reasons. Therefore, the readiness and satisfaction of these students are worth to be examined for an effective teaching and learning outcomes.

2.2

Section B

Study Protocol

2.2.1

Documents submitted

for Ethical Approval

Dissertation Proposal

School of Medical Science

University Science Malaysia

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Research Title

READINESS AND SATISFACTION OF THE ONLINE LEARNING AMONG MEDICAL STUDENTS UNDERGOING CLINICAL ROTATION DURING COVID-19 PANDEMIC

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1. Introduction

Nowadays, global technological innovations as well as widespread use of information and communication technologies have resulted in various transformations in every aspect of life, from business to educational systems. With this development, the educational settings have been gradually replaced by virtual or online educational platforms from the previously traditional in-class environment (1).

The concept of learner readiness was first proposed by Warner, Christie, and Choy (2). They specified the three important aspects of readiness for online learning environments. These are: (i) students' preferences for the form of delivery as opposed to face-to-face classroom instruction; (ii) student confidence in using electronic

communication for learning and, in particular, competence and confidence in the use of the internet and computer-mediated communication; and (iii) the ability to engage in autonomous learning.

Online learning environments provide students with flexibility in planning and controlling their learning. Learning will be facilitated if the students have enough technical skills, ability to self-learn and communicate and high motivation level. Determining the readiness level among the students who do not have experience for this method of learning contributes to both the learner and instructor's course plan (3). In order to conduct the online learning without any problems, it is crucial to determine the readiness and satisfaction levels among students and to evaluate the relationship between them for future benefits.

Since online learning is quite a new method of teaching and challenging to most of the students, perhaps there are some difficulties to them as well as associated factors that may influence the online learning readiness among them. However, ideally when the students are ready for online learning physically and mentally without or with little problems, supposedly they are more satisfied with the learning process which will contribute to a good academic achievement eventually.

Recently since December 2019, the entire world was affected by Corona Virus Disease (COVID-19) outbreak where this disease was caused by a SARS-CoV-2 virus that was originated from Wuhan City, China (4). As a consequence, World Health Organization (WHO) has declared this disease as a pandemic on 11th March 2020. Following this condition, many countries including Malaysia have taken serious action to prevent the transmission as the disease was highly contagious and lead to death rapidly. One of that preventive measures was by implementing and conducting Movement Control

Order since 18th March 2020 where the mass gathering was prohibited (5). Due to this condition, the educational system in our country was dramatically changed from the traditional in-class and face-to-face environment to the virtual or online educational platforms especially at the university level.

2. Problem statement and study rationale

COVID-19 pandemic that was declared by WHO since 11th March 2020 had affected of many aspects in our daily life, including educational system at the university level. Since our country have implementing Movement Control Order during this pandemic in order to prevent the outbreak, there are some difficulties and limitations to conduct the teaching and learning process in a normal way like we used to do before. Therefore, the learning process was gradually changing from the in-class and face-to-face environment to online platforms in most of the universities in our country.

Due to this new normal method of teaching implemented at the university level, evaluating the degree of readiness and determining the satisfaction levels among the undergraduate medical students of USM health campus towards online learning and following that examining the correlation between readiness and satisfaction levels is very crucial. In addition, there is no similar study conducted in Malaysia even though there are similar studies abroad.

Besides that, this study would serve as an assessment on the performance and quality of teaching conducted via online platforms as the responses and feedbacks from this survey could be used to improve any weaknesses or problems potentially identified from the online teaching. In addition, the online learning has become an integral of new

educational frontier generally for USM and specifically for medical schools throughout Malaysia as a whole.

3. Research Question (s)

1) What is the level of readiness for the online learning among the undergraduate medical students at USM health campus during COVID-19 pandemic?

2) What is the level of satisfaction for the online learning among the undergraduate medical students at USM health campus during COVID-19 pandemic?

3) Is there any correlation between readiness and satisfaction levels towards online learning among the undergraduate medical students at USM health campus during COVID-19 pandemic?

4. Objectives

General:

To study the readiness and satisfaction levels among the undergraduate medical students at USM health campus following the online learning during COVID-19 pandemic.

Specific

1) To determine the level of readiness towards online learning among the undergraduate medical students at USM health campus during COVID-19 pandemic.

2) To determine the level of satisfaction towards online learning among the undergraduate medical students at USM health campus during COVID-19 pandemic.

3) To examine the correlation between readiness and satisfaction levels towards online learning among the undergraduate medical students at USM health campus during COVID-19 pandemic.

5. Hypotheses:

1) Null hypothesis: There is no correlation between readiness and satisfaction levels among the undergraduate medical students at USM health campus towards online learning.
2) Alternative hypothesis: There is a significant correlation between level of readiness and satisfaction among the undergraduate medical students at USM health campus towards online learning.

6. Literatures review

Hung, et al. (6) conducted a study on scale development and student perceptions about learner readiness for online learning in 2010. There were 1051 college students who were enrolled in at least one of 5 online courses in 3 universities in Taiwan recruited in this study. With their Online Learning Readiness Scale (OLRS), Hung, et al. pointed out that there are five factors influencing online learning readiness. These factors were self-directed learning, motivation for learning, computer/Internet self-efficacy, learner control and online communication self- efficacy. The results of this study showed that students' levels of readiness were high in computer/internet self-efficacy,

motivation for learning and online communication self-efficacy and were low in learner control and self-directed learning. This study also found out that gender made no statistical differences in the five OLRS dimensions, but higher grade students exhibited significantly greater readiness in all dimensions ($p < 0.05$ or 0.01) except in computer/internet self-efficacy compared to lower grade students.

Another study was carried out by Aynur Kolburan Gecer and Arzu Deveci Topal in 2015. The study was about Development of satisfaction scale for E-Course: Reliability and validity study. The purpose of this study is to develop a valid and reliable instrument in order to determine the satisfaction level of university students for the e-course where it involved 414 university students (53.4% males, 46.6% females) in various faculties of Kocaeli University, Turkey and have taken at least one course completely online. As a final result, this scale consisted of five-point Likert-type 35 items and five sub-dimensions including course content and teaching process, used materials and communication tools, attitudes towards e-learning, media design and teacher-student interaction. The findings obtained from this study have revealed that satisfaction scale for the e-course is a valid and reliable instrument to be used in determining the satisfaction of university students related to online courses with the Cronbach's alpha value of 0.966 (7).

The next study investigated 352 university students from various faculties who had completed at least one online course during the 2014-2015 academic year at Kocaeli University in Turkey. This study investigated regarding level of satisfaction and readiness of online courses and the relationship between them. The study was conducted by Deveci Topal in 2016 where the author employed the scale developed by Hung et al. for online learning readiness and an online

course satisfaction scale covering 35 items with 5 sub-dimensions developed by himself and his colleague Aynur Kolburan Gecer (3).

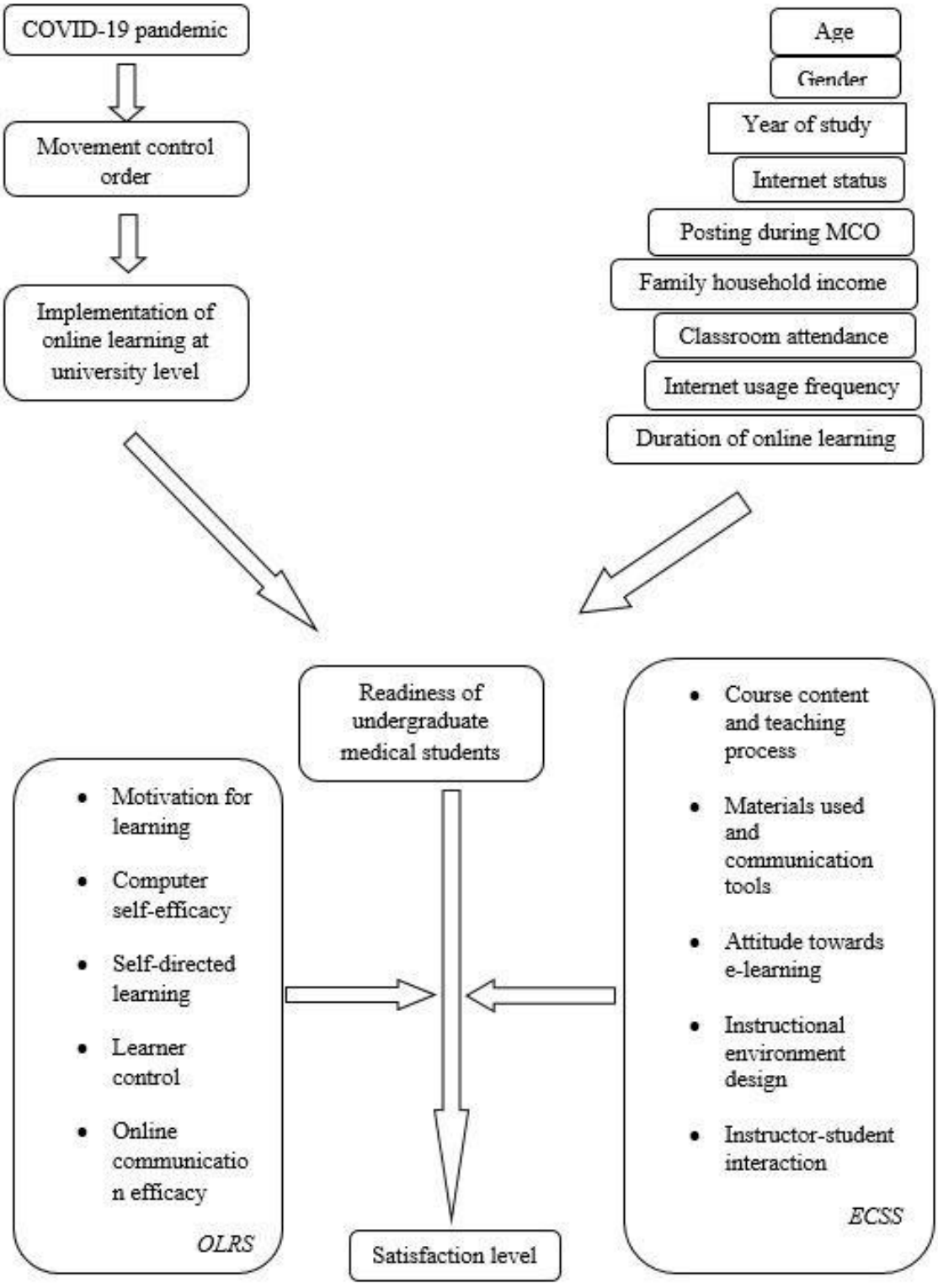
Based on this study, the level of readiness and satisfaction were measured using the following formula. Readiness/ Satisfaction rate = (obtained mean score/the highest that could be obtained) x 100. If the rate is < 49%, it was considered as low, if it was between 50-69%, the level was moderate and the level was considered high if the score is > 70%. The findings in this study concluded that online learning readiness level was high in all dimensions and the students were observed to be ready for the online learning. Meanwhile, overall satisfaction appeared at moderate level whereas the satisfaction level was higher in the instruction-student interaction and environment design as compared with the level of other sub-dimensions. The results also stated that there was a positive significant relationship between students' satisfaction with e-courses and levels of readiness for the courses ($p < 0.01$).

By using the same online learning readiness scale as a data collection instrument, Kirmizi has conducted a study involving 84 English Language and Literature Distance Education Program students in Karabuk University, Turkey in 2015 under the topic of "The influence of learner readiness on student satisfaction and academic achievement in an online program at higher education" (8). The findings stated that all the sub-dimensions of learner readiness in OLRS correlated significantly with the concept of student satisfaction and student success. With regression analysis, it was shown that motivation was the most significant factor having an impact on learner satisfaction of online learning ($\beta = .33$, $p < .05$) while self-directed learning was the most crucial predictor of success ($r = .40$, $p < .01$).

Mustafa Naci Kayaoglu et al (1) conducted a case study in the field of English for medical purposes regarding online learning readiness where the purpose of this study is to find out online learning readiness level of 189 first year medical students from Faculty of Medicine at a university in the north-eastern part of Turkey. The overall results suggested that once the internet and computer self-efficacy of the participants were improved, they appeared to be ready for the adoption of online learning.

In a different study entitled Analysis of students' online learning readiness based on their emotional intelligence level, Melih Engin (9) had evaluated 95 students of Uludağ University Faculty of Theology Department of Primary Education Religious Culture and Moral Knowledge during the 2014 – 2015 academic year fall semester in Turkey. By using the correlational research method, 2 questionnaires were used in this study, Online Learning Readiness Scale (OLRS) and Trait Emotional Intelligence Scale – Short Form (TEIS-SF). The final results of this study demonstrated that there was a meaningful relationship between students' online learning readiness and the individual's emotional intelligence dimension ($p < 0.01$). Individuals with a high social skills sub-dimension of emotional intelligence had high online learning readiness levels. Furthermore, it was determined that self-control emotional intelligence sub-dimension had a greater prediction power on learner control, one of the online learning readiness levels, when compared to other emotional intelligence sub-dimensions ($t = 33.43$; $p \leq .01$).

7. Conceptual Framework



8. Research design

This is a cross-sectional study where a survey design is employed using a google form. The google form will include study information, informed consent, socio-demographic characteristics and self-assessment tools where the information regarding the study will be disseminated to all participants via WhatsApp, email and other digital communication platforms.

In view of multiple phases of movement control order that were implemented by the government during this COVID-19 pandemic, the recovery movement control order (RMCO) was chosen as the starting point (10th June 2020 till March 2021) as this was the time frame to determine the readiness and satisfaction levels towards online learning and the correlation between them. The reasons why this time frame was chosen due to easier access to medical students especially those in clinical year students. These students would have already returned to the campus for the continuation of their study in order to get the data collection as they are already going back to the campus. Besides that, the online teaching sessions would be an ongoing session for almost 3 months already during this period. This would allow the medical students to be accustomed with the system, methods of learning and access to online teaching adequately.

9. Study Population

Reference population: Undergraduate medical students of Year 3 to Year 5 in USM Kubang Kerian health campus. The number of participants was estimated to be around 179 students.

10. Subject criteria

Inclusion criteria:

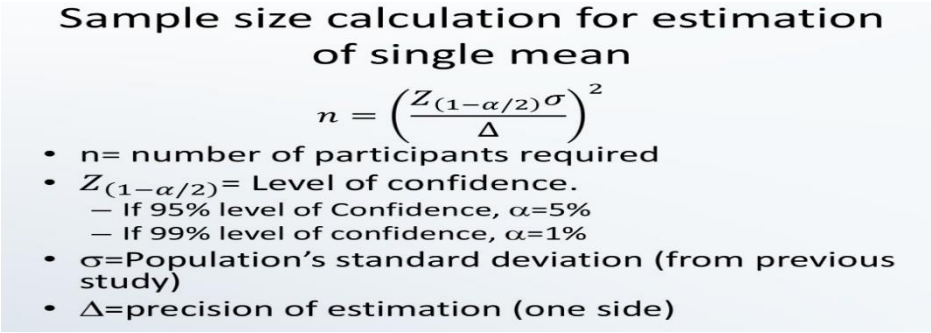
1. Year 3 to Year 5 of undergraduate medical students in USM Kubang Kerian health campus.

Exclusion criteria:

1. Refused to participate in the study
2. Incomplete filling of questionnaires
3. Unable to access internet for online teaching during MCO period

11. Sample size estimation

To achieve the first and second objectives, single mean estimation formula (Arifin W.N 2020) was used (10). The formula is shown as below:



The calculated sample size for the first objective was simplified as in the following table:

Variable	Standard deviation	Precision	Sample size (n)	n + 10%	Reference
Readiness	3	1	35	39	Arzu Deveci Topal 2016 (3)
Confidence level 95% Dropout rate 10%					

The calculated sample size for the second objective was shown in the table below:

Variable	Standard deviation	Precision	Sample size (n)	n + 10%	Reference
Satisfaction	5	1	97	108	Arzu Deveci Topal 2016 (3)
Confidence level 95% Dropout rate 10%					

In contrast with the previous objectives, sample size estimation using Pearson correlation estimation was used (Arifin W.N 2020) to achieve the final objective in this study. Based on Arzu Deveci Topal 2016, to estimate the sample size for expected correlation of 0.6 with 0.1 precision, 95% confidence level and 10% dropout rate, 179 respondents were required. The calculation was shown as in the table below:

Variable	Expected correlation, r	Precision	Sample size (n)	n + 10%	Reference
Correlation between readiness and satisfaction	0.6	0.1	161	179	Arzu Deveci Topal 2016 (3)
Confidence level 95% Dropout rate 10%					

12. Sampling method and subject recruitment

In this study, all eligible participants that agree to participate will be recruited, therefore no sampling method is required (convenience sampling method).

In order to recruit the eligible participants, collaboration with the Head of Department of Paediatrics, Academic office, the respective student's coordinators and

students' group leaders of Year 3 to Year 5 will be organized to obtain the list name of the students. In addition, the information and link to the survey form will be disseminated via digital platform such as WhatsApp and email.

13. Research tools

1. Online Learning Readiness Scale (OLRS) developed by Hung, Chou, Chen and Own (6) is the main data collection instrument in the study. OLRS was preferred over the other scales as the scale is an up-to-date, valid, reliable and also compact. This scale consisted of total 18 items with 5 dimensions. Accordingly, there are 5 items for the dimension of self-directed learning, 4 items for motivation for learning, 3 items for computer/Internet self-efficacy, 3 items for learner control and 3 items for online communication self-efficacy. The responses were gathered on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale was already available in English language. It was found out that the corrected item-total correlations ranged from .58 to .87 and there was a significant difference in the means of 27% sub-up groups for all the items in the scale. The results related to the item-total correlation and the internal consistency reliability coefficients were found to be as follows. For ―Computer and internet self-efficacy, the reliability coefficient was between .72 and .79, and Cronbach's alpha.87; for ―Self-directed learning, the reliability coefficient was between .58 and .85, and Cronbach's alpha .89; for ―Learner control, the reliability coefficient was between .58 and .70 and Cronbach's alpha.76. For ―Motivation for learning, the reliability coefficient was between .84 and .87, and Cronbach's alpha.89. For ―Online communication self-efficacy, the reliability coefficient was between .74 and .80 and Cronbach's alpha .84. Besides that, this scale was

also tested to 175 of Year 1-2 medical students in USM Kubang Kerian health campus to get the Cronbach's alpha in the local setting, which are measured as 0.906. According to each dimension for this scale, the Cronbach's alphas were as follow, computer/internet self-efficacy: 0.796, self-directed learning: 0.844, learner control: 0.614, motivation for learning: 0.759, online communication self-efficacy: 0.737.

2. The data was also collected through the E-Course Satisfaction Scale (ECSS) that was developed by Kolburan Gecer and Deveci Topal (7) in order to determine how satisfied the students were with the e-learning method. The original scale was composed of 35 5-point Likert-type items and five sub-dimensions namely course content and teaching process, materials used and communication tools, attitude towards e-learning, environment design and instructor-student interaction. In the principal components analysis, the varimax rotation technique was used; a 5-factor structure with an eigenvalue over 1.00 which explained 67.61% of the total variance was obtained. Factor loading of the items in the scale ranged from —.478 to —.833 and item-total correlations were between .526 and. 872. The reliability of the scale was measured as Cronbach's Alpha=0.966. However, since this scale was available in Turkish language only, several steps had been done before it can be implemented in this study. The original Turkish scale has undergone systematic translation procedures resulting in the face validity index (FVI) of 0.78 with 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 (11).

Before conducting the study, we will get the permission to use the tools from the correspondent authors first.

14. Operational definition

1. Online learning: is a form of distance education which is any learning that takes place across distance and not in a traditional classroom in which students and instructor must be in the same place at the same time. It is a form of education that takes place over the internet and also called as e-learning, for examples any form of learning or teaching that was conducted using webex, google meet, zoom and other online platforms (12).
2. Online learning readiness: refers to all stakeholders' preparedness for an online learning process mentally and physically (13). It was measured using OLRS questionnaire. The readiness rate was measured collectively where the formula is as below:

Readiness rate = (obtained mean score/the highest that could be obtained) x 100. If the readiness rate was 49% or less, the readiness was regarded as low; if it was between 50-69%, the readiness level was moderate; and if the rate was over 70%, the readiness level was regarded as high (3).

For example, the readiness rate for each dimension in the OLRS is summarized as below:

a) Computer/ internet self-efficacy = X1/15 x 100
b) Self-directed learning = X2/25 x 100
c) Learner control = X3/15 x 100
d) Motivation for learning = X4/20 x 100
e) Online communication self-efficacy = X5/15 x 100

3. Satisfaction: means the perceptions of learners of the value of a course and their experiences in the learning program (14). It was measured using the ECSS questionnaire and the satisfaction rate was represented as a collective measure.

By using the same formula as readiness rate, satisfaction rate was measured as follows:

Satisfaction rate = (obtained mean score/the highest that could be obtained) x 100. If the satisfaction rate was 49% or less, the satisfaction was regarded as low; if it was between 50-69%, the satisfaction level was moderate; and if the rate was over 70%, the satisfaction level was regarded as high (3).

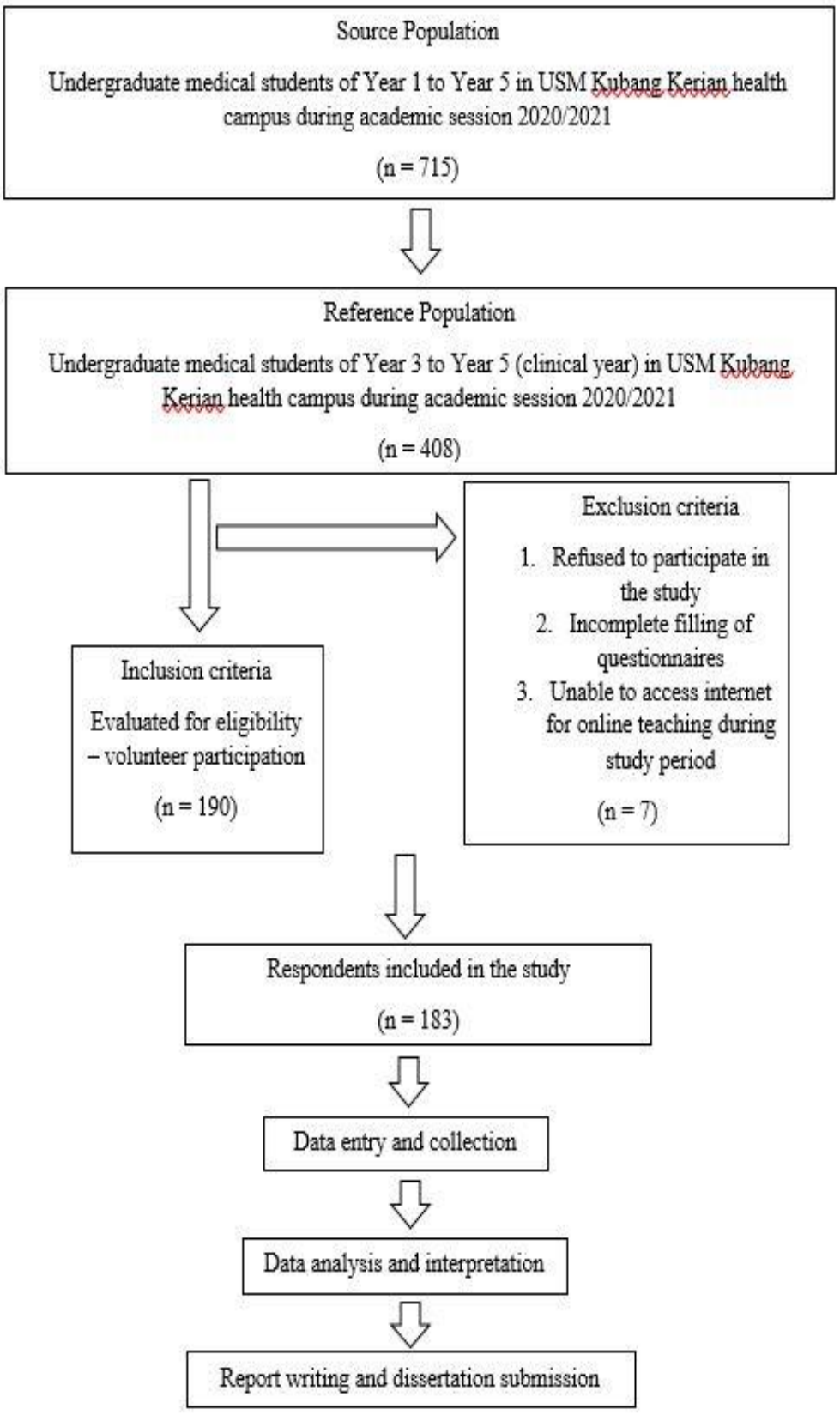
For example, the satisfaction rate for each dimension in the ECSS is summarized as the following:

a) Materials used and communication tools = X1/40 x 100
b) The instructor-student interaction = X2/20 x 100
c) Instructional environment design = X3/40 x 100
d) Attitudes towards e-course = X4/30 x 100
e) Course content and teaching process = X5/45 x100

15. Data collection method

After getting permission and approval from the ethical committee, data collection activity will be conducted. We will use a google form where the information regarding the study will be disseminated to all participants via WhatsApp, email and other digital communications platform. The google form will include study information, informed consent, socio-demographic characteristics and the self-assessment tools. The form will include the participant's name and contact number but they will be identified as unique subject number to ensure confidentiality.

16. Study flowchart



17. Data analysis

Data will be entered and analysed using SPSS version *26*. Descriptive analysis will be used to summarise the socio-demographic characteristics of the subjects.

To answer the first objective, descriptive analysis will be used to describe the level of readiness with mean (SD) for numerical variable and n (%) for categorical variable.

Similar to the first objective, descriptive analysis will be used to describe the level of satisfaction with mean (SD) for numerical variable and n (%) for categorical variable for the second objective.

Pearson correlation will be used to measure the correlation between readiness and satisfaction level, which is the last objective in this study.

18. Expected result (s)

Table 1: Sociodemographic characteristics of study participants.

Demographic	Characteristics	No (%)
Age		
Gender	Male Female	
Year of study	Year 3 Year 4 Year 5	
Posting during RMCO		
Family household income		
Classroom Attendance Percentage of presence in organized online teaching (1% - 100%)		

Internet status (strength) during online teaching (most of the time)	Poor Medium Good Very good	
Internet usage frequency (weekly)	1-5 hours 6-10 hours 11-15 hours 15 hours and above	
Duration of online learning (hours)	< 1 hour 1-2 hours 2-3 hours >3 hours	

Table 2: Results of Online Learning Readiness Scale

Dimension of scale	N	Min	Max	Mean	s.d	Readiness rate
Computer/ internet self-efficacy						
Self-directed learning						
Learner control						
Motivation for learning						
Online communication self-efficacy						
Total						

Table 3: Satisfaction rates related to scale of satisfaction with e-courses and its sub-dimensions

Dimensions of the scale	N	Min	Max	Mean	s.d	Satisfaction rate
Materials used and communication tools						
The instructor-student interaction						
Instructional environment design						
Attitude towards e-course						

Course content and teaching process						
Total						

Table 4: Correlation between readiness and satisfaction level

Readiness (OLRS)	Satisfaction (ECSS)	
	Pearson correlation	
	Correlation (r)	p-value
Computer/ internet self-efficacy		
Self-directed learning		
Learner control		
Motivation for learning		
Online communication self-efficacy		

19. Gantt chart and Milestones

Project Activities	July 2020	August-Dec 2020	Jan - Feb 2021	March - June 2021
Research proposal activities				
Recruitment & Data collection				
Data analysis/interpretation				
Thesis write up				

20. Budget proposal [If applicable]:

Nil

21. Ethical consideration (s)

1. Subject vulnerability

The participants are vulnerable in several ways and proper steps will be taken to reduce the effects of this vulnerability. To reduce this vulnerability, during the consent process, the participants will be properly reassured that participation for this study is completely on a voluntary basis. The researchers and respondents have no relation directly or indirectly. There will be no consequences whatsoever if respondents refused to participate in the study.

The information disclosed by the respondents should not affected on their performance or study evaluation. To reduce this vulnerability, all data will be collected anonymously and none of the responses given will be traceable back to their identity.

2. Declaration of absence of conflict of interest

There is no conflict of interest.

3. Privacy and confidentiality

All forms are anonymous and will be entered into SPSS software using unique subject number. Only research team members can access the data. Data will be presented as grouped data and will not identify the respondent individually. The participants may get the feedback from the researcher upon request.

4. **Community sensitivities and benefits**

This study can give benefits to both parties as the results can provide a feedback to the lecturers about the effectiveness of the online learning conducted by them compared to face-to-face learning so that they can improve any weakness from the teaching process. Besides that, this study can help the lecturers to create and develop an online program/course for the medical students in the future if they seem to be ready and much satisfied with the online learning and can give a good example to the whole medical school as well. The feedback of this study will be channelled to academic office and coordinators of the rotation respectively.

5. **Honorarium and incentives**

Nil

6. **Other ethical review board approval [if applicable]**

The JEPeM and Director Hospital USM approval will be sought first prior to conduct the study.

Contact

Person to contact for further information:

1. Dr Mohd Jamaluddin bin Musa

Phone No : 013-6452431

Email : jamal_musa@student.usm.my

REFERENCES

1. Kayaoğlu MN, Dağ Akbaş R. Online Learning Readiness: A Case Study in the Field of English for Medical Purposes. Participatory Educational Research (PER), Special Issue 2016-IV;212-220.

2. Warner D, Christie G, Choy S. The readiness of the VET sector for flexible delivery including on-line learning: final draft. Australian National Training Authority (ANTA). Brisbane. 1998;1–63.

3. Topal AD. Examination of university students' level of satisfaction and readiness for e-courses and the relationship between them. Eur J Contemp Educ. 2016;15(1):7–23. DOI: 10.13187/ejced.2016.15.7.

4. Lipsitch M, Swerdlow DL, Finelli L. Defining the Epidemiology of Covid-19 — Studies Needed. N Engl J Med. 2020;382(13):1194–6. DOI: 10.1056/NEJMp2002125.

5. Abdullah JM, Wan Ismail WFN, Mohamad I, Ab Razak A, Harun A, Musa KI, et al. A critical appraisal of COVID-19 in Malaysia and beyond. Malaysian J Med Sci. 2020;27(2):1–9. DOI: 10.21315/mjms2020.27.2.1

6. Hung ML, Chou C, Chen CH, Own ZY. Learner readiness for online learning: Scale development and student perceptions. Comput Educ. 2010 Nov;55(3):1080–90. DOI:10.1016/j.compedu.2010.05.004.

7. Kolburan Geçer A, Topal AD. Development of Satisfaction Scale for E-Course: Reliability and Validity Study. Journal of Theory and Practice in Education. 2015;11(4):1272–87.

8. Özkan Kırmızı A. The Influence Of Learner Readiness On Student Satisfaction And Academic Achievement In An Online Program At Higher Education. Vol. 14, TOJET: The Turkish Online Journal of Educational Technology. 2015.

9. Engin M. Analysis of Students' Online Learning Readiness Based on Their Emotional Intelligence Level. Univers J Educ Res. 2017 Dec;5(12A):32–40. DOI: 10.13189/ujer.2017.051306.

10. Arifin WN. Sample size calculator (web) [Internet]. 2023 [cited 7 February 2023]. Available from: http://wnarifin.github.io

11. Othman A, Mohd N, Fakri RM, Taib F, Musa MJ. Measuring Students' Satisfaction in E-learning Experience: A Validity Study on English version of E-Course Satisfaction Scale (ECSS) among Medical Students. Malaysian Journal of Medicine and Health Sciences. 2021; 17(4): 410-412.

12. Stern J. Introduction to online teaching and learning. Int J Sci Educ [Internet]. 2018;3(3):1–10. Available from: http://www.sloan-c.org/resources/index.asp.

13. Chin K, Kon P. Critical Success Factors for E-Learning. Proc IADIS Int Conf e- [Internet]. 2004;140–3. Available from: http://scholar.google.com/scholar.

14. Kuo YC, Walker AE, Belland BR, Schroder KEE. A predictive study of student satisfaction in online education programs. Int Rev Res Open Distance Learn. 2013;14(1):16–39. DOI: https://doi.org/10.19173/irrodl.v14i1.1338

2.2.2

Ethical approval letter

Human Research Ethics Committee USM (HREC)

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30th November 2020

Dr. Mohd Jamaluddin Musa
Department of Paediatrics
School of Medical Sciences
Universiti Sains Malaysia
16150 Kubang Kerian, Kelantan.

JEPeM Code : USM/JEPeM/COVID19-46
Protocol Title : The Level of Readiness and Satisfaction towards Online Learning among the Medical Students during COVID-19 Pandemic: A USM Experience.

Dear Dr.,

We wish to inform you that your study protocol has been reviewed and is hereby granted approval for implementation by the Jawatankuasa Etika Penyelidikan Manusia Universiti Sains Malaysia (JEPeM-USM). Your study has been assigned study protocol code **USM/JEPeM/COVID19-46**, which should be used for all communications to JEPeM-USM in relation to this study. This ethical approval is valid from **30th November 2020** until **29th November 2021.**

Study Site: Health Campus, Universiti Sains Malaysia.

The following researchers are also involved in this study:

1. Dr. Fahisham Taib
2. Assoc. Prof. Dr. Azizah Othman
3. Dr. Nik Mohd Rizal Mohd Fakri

The following documents have been approved for use in the study.

1. Research Proposal

In addition to the abovementioned documents, the following technical documents were included in the review on which this approval was based:

1. Participant Information Sheet and Consent Form (English version)
2. Sociodemographic Data
3. Online Learning Readiness Questionnaire

The list of JEPeM-USM members present during the full board meeting reviewing your protocol is attached.

While the study is in progress, we request you to submit to us the following documents:

1. Application for renewal of ethical approval 60 days before the expiration date of this approval through submission of **JEPeM-USM FORM 3(B) 2019: Continuing Review Application Form.**
2. Any changes in the protocol, especially those that may adversely affect the safety of the participants during the conduct of the trial including changes in personnel, must be submitted or reported using **JEPeM-USM FORM 3(A) 2019: Study Protocol Amendment Submission Form.**
3. Revisions in the informed consent form using the **JEPeM-USM FORM 3(A) 2019: Study Protocol Amendment Submission Form.**

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JAWATANKUASA ETIKA PENYELIDIKAN MANUSIA

4. Reports of adverse events including from other study sites (national, international) using the **JEPeM-USM FORM 3(G) 2019: Adverse Events Report.**
5. Notice of early termination of the study and reasons for such using **JEPeM-USM FORM 3(E) 2019.**
6. Any event which may have ethical significance.
7. Any information which is needed by the JEPeM-USM to do ongoing review.
8. Notice of time of completion of the study using **JEPeM-USM FORM 3(C) 2019: Final Report Form.**

Please note that forms may be downloaded from the JEPeM-USM website: **www.jepem.kk.usm.my**

JEPeM-USM is in compliance with the Declaration of Helsinki, International Conference on Harmonization (ICH) Guidelines, Good Clinical Practice (GCP) Standards, Council for International Organizations of Medical Sciences (CIOMS) Guidelines, World Health Organization (WHO) Standards and Operational Guidance for Ethics Review of Health-Related Research and Surveying and Evaluating Ethical Review Practices, EC/IRB Standard Operating Procedures (SOPs), and Local Regulations and Standards in Ethical Review.

Thank you.

Sincerely,

ASSOC. PROF. DR. AZLAN HUSIN
Deputy Chairperson
Jawatankuasa Etika Penyelidikan (Manusia) JEPeM
Universiti Sains Malaysia

Jawatankuasa Etika Penyelidikan Manusia USM
(JEPeM) Human Research Ethics Committee USM (HREC)

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13th January 2022

Dr. Mohd Jamaluddin Musa
Department of Paediatrics
School of Medical Sciences
Universiti Sains Malaysia
16150, Kubang Kerian, Kelantan.

JEPeM USM Code: USM/JEPeM/COVID19-46

Study Protocol Title: The Level of Readiness and Satisfaction towards Online Learning among the Medical Students during COVID-19 Pandemic: A USM Experience.

Dear Dr.

We wish to inform you that the Jawatankuasa Etika Penyelidikan Manusia, Universiti Sains Malaysia (JEPeM-USM) acknowledged receipt of Continuing Review Application dated 28th November 2021.

Upon review of JEPeM-USM Form 3(B) 2021: Continuing Review Application Form, the committee's decision for the **EXTENSION OF APPROVAL IS APPROVED (start from 30th November 2021 till 29th November 2022).** The report is noted and has been included in theprotocol file.

Thank you for your continuing compliance with the requirements of the JEPeM-USM.

"WAWASAN KEMAKMURAN

BERSAMA 2030""BERKHIDMAT

UNTUK NEGARA"

Sincerely,

ASSOC. PROF. DR. AZLAN HUSIN
Chairperson
Jawatankuasa Etika Penyelidikan (Manusia),
JEPeMUniversiti Sains Malaysia

c.c Secretary
Jawatankuasa Etika Penyelidikan (Manusia),
JEPeMUniversiti Sains Malaysia

2.3

SECTION C:

Manuscript Ready for Submission

Readiness and satisfaction of the online learning among medical students undergoing clinical rotation during Covid-19 pandemic

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Running Head: Online learning readiness and satisfaction

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ABSTRACT

Online learning has become an important teaching method across academic programs during COVID-19 pandemic. We examined students' level of readiness and satisfaction on online learning and their association with selected variables. A cross-sectional study was conducted among medical students who undergo clinical rotation during restricted movement order, when face-to-face teaching and learning is converted into online method. Participants were recruited conveniently by inviting students from targeted clinical years to fill up Online Learning Readiness Scale (OLRS) and E-Course Satisfaction Scale (ECSS) distributed via digital platform. One-hundred and eighty-three (N=183) students in clinical posting of year 3 (33.9%), 4 (32.2%), and 5 (33.9%) completed the survey voluntarily. Majority was female (n=142, 78%) with a mean age of 22.85. Overall, they reported high level of readiness and satisfaction on online learning. There was positive moderate to good correlation 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 duration of learning showed significant linear relationship with satisfaction. Medical students reported high levels of readiness and satisfaction on online learning, despite heavily relying on this online learning mode to complete their clinical posting, during COVID-19 pandemic.

Keywords: *online learning, readiness, satisfaction, medical students, COVID-19*

INTRODUCTION

Global information and technology innovation results in communication transformation in aspects of life such as personal, business, and education. Teaching and learning gradually shift from conventional classroom or field teaching mode to 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 student is adequately prepared, communicates effectively with the instructor, technically skilful, motivated, and independent (1). Determining the readiness and satisfaction levels among students who have to abruptly resume into online learning due to situational crisis such as Corona Virus Disease 19 (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 important aspectin online learners. They involve learners' (i) preferences on teaching format which is online as opposed to face-to-face classroom instruction; (ii) competence and confidence to use internet and computer-mediated communication; and (iii) 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 on a course they enrol and the learning experiences (4). Satisfaction on online learning is influenced by various factors including readiness. Higher educational institutions need to consider student satisfaction as one of the major determinant 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 1051 Taiwanese college students. They proposed five factors influencing online learning readiness including self-directed learning, motivation, computer/internet self-efficacy, learner control and effective

communication. The study found that students with higher grade were more prepared for online learning in all dimensions except in computer/internet self-efficacy as compared to lower grade students.

Topal et al. investigated the level of satisfaction and readiness of students on e-courses and the relationship between them (2). There was a positive significant relationship between students' satisfaction with e-courses and levels of readiness for the courses ($p < 0.01$).

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

When the world was affected by COVID-19 (8), Malaysia government implemented stages of 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 – restricted or no human physical contact and movement. Education being a sector 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 programme during restricted movement control order.

Medical students are one of the most affected groups when online teaching becoming the only mode of teaching. In Malaysia, Bachelor of Medicine is a five-year programme commonly divided into two phases. Phase I is a pre-clinical consists of two years (Year 1 and 2) basic medical sciences teaching taking place in classroom. Phase II (Year 3-5) is clinical years involves medical skills training, development and subsequently consolidation of clinical clerkship in various

medical disciplines and specialities (10). Major postings such as paediatrics, medicine, surgery, orthopaedics and obstetrics and gynaecology last for 6-8 weeks and minor postings including ophthalmology and otorhinolaryngology take 2-4 weeks to complete. Clinical training is conducted at the field – such as paediatrics wards and clinic for paediatric posting, operation theatre during surgical posting, health clinics, or community setting. Face-to-face meeting between students, medical specialists and patients is critical to expose the former with experiential clinical skills and practices learning. However, during the MCO, clinical posting too had to be conducted through online learning platform because students were prohibited from entering the campus or hospital.

To the best of our knowledge, there is no study investigating readiness and satisfaction level among medical students towards online learning during COVID-19 pandemic in Malaysia. We opted to focus on students who were scheduled to complete their clinical posting assuming they could be the mostly affected group due to essential clinical skills teaching, and practices have to be delivered online. Learning clinical skills online from home or hostel could be challenging for the students, due to multiple reasons. Therefore, the readiness and satisfaction of these students are worth to be examined for an effective teaching and learning outcomes.

MATERIALS AND METHODOLOGY

Sample and Subjects

A cross-sectional study was conducted approximately nine months following the execution of the MCO, which was known as recovery phase. A total of 715 medical students enrolled in the respected academic year. Out of this population, 57% (n=408) was identified as the targeted participants – i.e., year 3, 4, and 5 who undergoing clinical posting. Sample size was calculated using single mean estimation and Pearson correlation estimation formula recommended the optimum sample size of 179.

Procedures

All eligible participants that agree to participate were recruited via convenience sampling method. The potential participants were conveniently approached via research invitation messages sent through students' group email and WhatsApp. A Google form link contains the survey was given to the batch leaders who shared it with their batchmates. Participation is completely anonymous and voluntary. Consent is considered when the participants agreed to answer the survey. A weekly reminder was sent to the batch leader to enhance the response rate. Participants with no internet access or sending incomplete responses were excluded from analysis. Ethical approval to conduct the study was obtained from The Human Research Ethical Committee Universiti Sains Malaysia (USM/JEPeM/COVID19-46).

Measures

Socio-demographic data gathered including age, gender, year of study, current posting, family household income, classroom attendance, internet stability during online teaching, frequency of internet use (per week) and duration of online learning (per day).

We employed Online Learning Readiness Scale (OLRS) to determine the level of readiness among the medical students towards online learning. This scale consists of 18 items from 5 dimensions including 5 items for self-directed learning, 4 items for learning motivation, 3 items for computer/Internet self-efficacy, 3 items for learner control and 3 items for online communication self-efficacy (6). The responses using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Originally developed in Taiwan, validated English version is available, with high Cronbach's alpha of 0.91 when tested among 175 medical students at local medical campus.

The E-course Satisfaction Scale (ECSS) was used to examine the satisfaction levels towards online learning. The original scale comprises of 35 items making up 5 dimensions which are 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 (11). The responses use a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The original Turkish scale has undergone systematic translation procedures resulting in the face validity index (FVI) of 0.78 with 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 (12).

The below equation was used to determine the readiness and satisfaction levels. Readiness/ satisfaction rate of each domain = (obtained mean score/the highest that could be obtained) x 100. If the rate was 49% or less, it was regarded as low; moderate level is between 50-69%, the high level is when the rate over 70% (2).

Data Analysis

IBM SPSS statistics 26 program was used for the data analysis. Descriptive analysis was performed to describe the demographic characteristics of the participants, the readiness and satisfaction levels towards online learning. Continuous or numerical data were described in mean

and standard deviation while categorical data were presented in frequencies and percentages. Pearson correlation was used to measure the correlation between readiness and satisfaction level which was reported as correlation co-efficient (r). Regression analysis (simple and multiple linear regression) were 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 p-value of less than 0.25 or clinically significant were selected and entered into the multiple linear regression analysis. Stepwise, forward and backward methods were applied. The results were presented as crude β (95% CI) and adjusted crude β (95% CI). For the final model, factors with p-value < 0.05 were chosen as statistically significant. R square of the final model was checked for model fitness.

RESULTS

Sociodemographic Data

Out of 408 participants invited, 190 responded to the survey resulting a response rate of 46.5%. Seven incomplete responses were omitted leaving 183 valid responses (N=183). Table 1 summarizes participants' sociodemographic characteristics. Majority are female (77.6%), having a good internet connection during online learning (55.2%), spent > 15 hours in a week for internet surfing (73.2%) and had online learning > 3 hours per day (57.4%). The participants are almost equally distributed in number based on year of study. Fifty-four participants (29.5%) enrolled in Paediatric posting during the study period.

Readiness

The readiness level among participants towards online learning appeared to be high in all dimensions except on learner control which was moderate. The computer/ internet self-efficacy had contributed the highest level (83%) while the lowest was the learner control (62%). Overall level of readiness was high, accounted for 73%. Table 2 showed the findings of readiness level towards online learning among the participants.

Satisfaction

The level of satisfaction towards online learning is listed in Table 3. Overall, satisfaction contributes for 71%. Three out of five dimensions were at the high level except for the materials used and communication tools (69%) and attitude towards e-learning (60%).

Correlation Between Readiness and Satisfaction

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 as stated in Table 4. We observed that the higher the readiness, the higher the satisfaction would be.

Factors Associated with Readiness and Satisfaction Level

Regression analysis identified four factors to have significant linear relationship with the readiness level of the participants towards online learning during COVID-19 pandemic. These factors were age ($\beta = 1.12$, $p = 0.037$), posting during the study period ($\beta = -4.09$, $p = 0.003$), online classroom attendance ($\beta = 0.45$, $p = 0.008$) and duration of online learning ($\beta = 3.44$, $p = 0.036$). The readiness level was higher among those undergoing Paediatric posting than those undergoing other posting during the study period ($\beta = -4.09$, 95% CI -6.80, -1.39). Those who had online learning duration > 3 hours reported higher readiness score by 3.44 (0.23, 6.64) as compared to those had 1-2 hours online teaching per day. The model explains 12.9% of variations of total OLRS score in the study population as stated in Table 5.

With regards to the satisfaction level, the duration of online learning was the only factor that had significant linear relationship. As compared to the group with 1-2 hours, those with 2-3 hours and > 3 hours of online learning per day had higher satisfaction score by 7.60 (1.54, 13.7) and 5.14 (0.04, 10.3) respectively. The model explains 6.8% of variations of total ECSS score in the study population as described in Table 6.

DISCUSSION

Whilst majority of the respondents are female, they are equally distributed among three years i.e., year 3, 4 and 5 suggesting good representative sampling of clinical years. Most of them are from moderate to high level of socioeconomic status, explaining majority could afford personal computer and subscribe to reliable internet provider for online learning. This would also indirectly influence their knowledge and exposure to computer skills, consequently their readiness towards online learning. Most of the participants were online more than 15 hours weekly which may have also contributed to upskilling and mastering in online learning. Mustafa Naci investigated online learning readiness among first year medical students and notified as the internet and computer self-efficacy improves, students are ready for the adoption of online learning (14).

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 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 the online learning despite the implementation was abrupt and non-optional. These participants are generation who are exposed to advanced information technology. They are familiar with many online applications and adapt in necessary computer skills thus online learning does not impose much problem during the COVID-19 pandemic.

Meanwhile, the dimension of learner control is reported to be at moderate level. Whilst they are ready for online learning, supervision and guidance from lecturers are needed to accommodate the learning process. Elements such as individual factors, accessibility to the system, close deadline of submission and time management may affect learners' readiness (15). The learner motivation from readiness sub-dimension is the one that influences satisfaction most as proposed by Kirmizi (7).

Participants' level of satisfaction towards online learning is high. This could be possibly due to effective teaching delivery using new method which can fulfil the goals despite in pandemic time. It is important to ensure continuous effective learning and safety of the learners during the pandemic outbreak. Communication tools and attitude towards e-learning were reported at moderate level. Ozkan and Koseler (16) suggested positive relationship between learners' attitude and their satisfaction in 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 (15). Learners who believe that the online learning as an effective learning tool will display a positive attitude towards online learning (17). Their satisfaction towards online learning is very important marker as it can directly affect the students' achievement in their academic performance.

There is 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 an important indicator for drop-out in online courses is learners' satisfaction. In fact, level of satisfaction among learners who leave the education system seem to be lower than those who are successful (18).

We identified factors such as age, type of posting, attendance, and duration of online learning to have 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 to be higher than those in non-paediatric posting. Majority paediatric lecturers have had experiences using online platform for variety purposes before COVID-19 pandemic. Thus, despite the need to abruptly shifting 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 that clinical skills can still be effectively taught online. For example, one paediatrician broadcasted live event when he conducted clinical interview and examination onto a child so that the class can appreciate the process as they are occurring in a natural situation. Participants who undergo more than 3 hours online learning daily reported higher readiness level since they have much more exposure and confidence as compared to those who underwent online learning intermittently. With regards to the satisfaction, duration of online learning was the only factor that has significant relationship. As a conclusion, the longer the duration of online learning, the higher the satisfaction level will be.

There are a few limitations of this study. The findings from a single setting targeted specific groups of students undergoing clinical posting may not be representing students' readiness and satisfaction in general medical programme. Whilst readiness and satisfaction towards online learning has been examined, equally important is to study how clinical teaching can be delivered effectively via online mode. This include exploring a teaching method so that clinical skills such as interview, examination, and communication can be delivered online. Finally, future research can examine the relationship between instructor's readiness and student satisfaction, online clinical skills teaching and imparting a new dimension to clinical skills using virtual platform.

CONCLUSION

We found high level of readiness and satisfaction among medical students undergoing clinical posting towards online learning during COVID-19 pandemic. We conclude that the medical students are sufficiently ready, competent, and satisfied with the online learning being a new mode of learning during COVID-19 pandemic. Good technical support from the students, teachers and institution are important to ensure a sustainable, achievable, and effective new norm of learning method.

ACKNOWLEDGEMENT

We would like to thank specifically to Brigadier General Dr Mohd Rudduan Abdul Rahman and Major (R) Dr Ahmad Filza Ismail who voluntarily participated in the translation of the ECSS scale, and also Dr Miswar Abdul Halim for reconciliation of the scale. We also would like to thank to Dr. Mohd Azmi Suliman for helping us with the statistical analysis. We would like to thank to all the medical students in the clinical year based at Hospital USM in this study and at IIUM Health Campus who voluntarily involved in the preliminary validation study of ECSS.

CONFLICT OF INTEREST

No possible conflict of interest to be declared.

REFERENCES

1. Chun C, Lau Y. editors. Effects of Personal Characteristics on Learner Online Learning Readiness. EDU-COM Int Conf. 2008;(November):19–21. Perth Western Australia. Edith Cowan University, Western Australia in association with Khon Kaen University, Thailand and Bansomdejchaopraya Rajabhat University, Thailand. 2008.
2. Topal AD. Examination of university students' level of satisfaction and readiness for e-courses and the relationship between them. Eur J Contemp Educ. 2016;15(1):7–23. DOI: 10.13187/ejced.2016.15.7.
3. Warner D, Christie G, Choy S. The readiness of the VET sector for flexible delivery including on-line learning: final draft. Australian National Training Authority (ANTA). Brisbane. 1998;1–63.
4. Kuo YC, Walker AE, Belland BR, Schroder KEE. A predictive study of student satisfaction in online education programs. Int Rev Res Open Distance Learn. 2013;14(1):16–39. DOI: https://doi.org/10.19173/irrodl.v14i1.1338.
5. Yukselturk E, Yildirim Z. Investigation of interaction, online support, course structure and flexibility as the contributing factors to students' satisfaction in an online certificate program. Educ Technol Soc. 2008;11(4):51–65.
6. Hung ML, Chou C, Chen CH, Own ZY. Learner readiness for online learning: Scale development and student perceptions. Comput Educ. 2010 Nov;55(3):1080–90. DOI:10.1016/j.compedu.2010.05.004.
7. Özkan Kırmızı A. The Influence Of Learner Readiness On Student Satisfaction And Academic Achievement In An Online Program At Higher Education. Vol. 14, TOJET: The Turkish Online Journal of Educational Technology. 2015.
8. Lipsitch M, Swerdlow DL, Finelli L. Defining the Epidemiology of Covid-19 — Studies Needed. N Engl J Med. 2020;382(13):1194–6. DOI: 10.1056/NEJMp2002125.

9. Abdullah JM, Wan Ismail WFN, Mohamad I, Ab Razak A, Harun A, Musa KI, et al. A critical appraisal of COVID-19 in Malaysia and beyond. Malaysian J Med Sci. 2020;27(2):1–9. DOI: 10.21315/mjms2020.27.2.1
10. List of medical schools in Malaysia - Wikipedia [Internet]. [cited 2022 Nov 29]. Available from: https://en.wikipedia.org/wiki/List_of_medical_schools_in_Malaysia
11. Kolburan Geçer A, Topal AD. Development of Satisfaction Scale for E-Course: Reliability and Validity Study. Journal of Theory and Practice in Education. 2015;11(4):1272–87.
12. Othman A, Mohd N, Fakri RM, Taib F, Musa MJ. Measuring Students' Satisfaction in E-learning Experience: A Validity Study on English version of E-Course Satisfaction Scale (ECSS) among Medical Students. Malaysian Journal of Medicine and Health Sciences. 2021; 17(4): 410-412.
13. Jabatan Perangkaan Malaysia. Laporan Survei Pendapatan Isi Rumah dan Kemudahan Asas 2019. Malaysia. Jabatan Perangkaan Malaysia. 2020;1-5.
14. Kayaoğlu MN, Dağ Akbaş R. Online Learning Readiness: A Case Study in the Field of English for Medical Purposes. Participatory Educational Research (PER), Special Issue 2016-IV;212-220.
15. Ilgaz H, Gülbahar Y. A Snapshot of Online Learners: e-Readiness, e-Satisfaction and Expectations. Vol. 16, International Review of Research in Open and Distributed Learning. 2015; 171-187. DOI:10.19173/irrodl.v16i2.2117.
16. Ozkan S, Koseler R. Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. Comput Educ. 2009 Dec;53(4):1285–96. DOI:10.1016/j.compedu.2009.06.011.
17. Liaw SS, Huang HM, Chen GD. Surveying instructor and learner attitudes toward e-learning. Comput Educ. 2007 Dec 1;49(4):1066–80. DOI:10.1016/j.compedu.2006.01.001.
18. Levy Y. Comparing dropouts and persistence in e-learning courses. Comput Educ. 2007 Feb 1;48(2):185–204. DOI:10.1016/j.compedu.2004.12.004.

TABLES

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

Characteristics	N (%)
Age	22.85 (1.19)[1]
Gender	
Male	41 (22.4)
Female	142 (77.6)
Year of study	
Year 3	62 (33.9)
Year 4	59 (32.2)
Year 5	62 (33.9)
Posting during the study period	
Paediatric	54 (29.5)
Non-Paediatric	129 (70.5)
Family household income (13)	
B40	67 (36.6)
M40	80 (43.7)
T20	36 (19.7)
Online classroom attendance	98.55 (3.73)[1]
Internet status during online learning	
Poor	4 (2.2)
Medium	51 (27.9)
Good	101 (55.2)
Very Good	27 (14.8)
Internet usage frequency	
1-5 hours	2 (1.1)
6-10 hours	25 (13.7)
11-15 hours	22 (12.0)
>15 hours	134 (73.2)
Duration of online teaching	
1-2 hours	36 (19.7)
2-3 hours	42 (23.0)
>3 hours	105 (57.4)

[1]Mean (SD)

Table 2: Results of Online Learning Readiness Scale (OLRS)

Dimension of scale	N	Min	Max	Mean	SD	Readiness rate (%)	Readiness level
Computer/ internet self-efficacy	183	3	15	12.43	1.59	83	High
Self-directed learning	183	5	25	17.66	3.32	71	High
Learner control	183	3	15	9.24	2.09	62	Moderate
Motivation for learning	183	4	20	15.28	2.26	76	High
Online communication self-efficacy	183	3	15	10.72	2.35	71	High
Total	183	18	90	65.32	8.73	73	High

Table 3: Results of E-Course Satisfaction Scale (ECSS)

Dimensions of the scale	N	Min	Max	Mean	SD	Satisfaction rate (%)	Satisfaction level
Materials used and communication tools	183	8	40	27.66	4.83	69	Moderate
The instructor-student interaction	183	4	20	14.32	2.55	72	High
Instructional environment design	183	8	40	30.44	3.61	76	High
Attitude towards e-course	183	4	20	12.01	3.31	60	Moderate
Course content and teaching process	183	8	40	28.49	3.49	71	High
Total	183	32	160	112.91	13.58	71	High

Table 4: Correlation between readiness and satisfaction level

Correlations			
		Total OLRS	Total ECSS
Total OLRS	Pearson Correlation	1	.601**
	Sig. (2-tailed)		.000
	N	183	183
Total ECSS	Pearson Correlation	.601**	
	Sig. (2-tailed)	.000	
	N	183	183

**Correlation is significant at the 0.01 level (2-tailed).

Table 5: Simple and Multiple Linear Regression for Factors Associated with Readiness (N = 183)

	SLR			MLR		
Characteristic	**Crude β**	**95% CI**	**p-value**	**Crude β**	**95% CI**	**p-value**
Age	0.74	-0.33, 1.81	0.173	1.12	0.07, 2.18	**0.037**
Gender						
Male (ref.)	—	—				
Female	-0.03	-3.09, 3.04	0.987			
Year of study						
Year 3 (ref.)	—	—				
Year 4	-2.20	-5.29, 0.90	0.164			
Year 5	1.61	-1.45, 4.67	0.300			
Posting during the study period						
Paediatric (ref.)	—	—		—	—	
Non-paediatric	-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 (ref.)	—	—				
M40	0.76	-2.09, 3.61	0.601			
T20	-1.79	-5.34, 1.77	0.323			
Internet status during online teaching						
Poor (ref.)	—	—				
Medium	-2.38	-11.2, 6.42	0.595			
Good	1.52	-7.12, 10.16	0.729			
Very good	2.69	-6.38, 11.77	0.559			
Internet usage frequency						
1-5 hours (ref.)	—	—				
6-10 hours	1.76	-10.98, 14.50	0.785			
11-15 hours	0.05	-12.76, 12.85	0.994			
>15 hours	1.47	-10.88, 13.82	0.815			
Duration of online teaching						
1-2 hours (ref.)	—	—		—	—	
2-3 hours	3.92	0.05, 7.79	**0.047**	2.17	-1.62, 5.96	0.259
> 3 hours	3.88	0.59, 7.17	**0.021**	3.44	0.23, 6.64	**0.036**

$R^2 = 0.129$

No interaction or multicollinearity was found. Model assumptions were met.

Table 6: Simple and Multiple Linear Regression for Factors Associated with Satisfaction (N = 183)

	SLR			MLR		
Characteristic	Crude β	95% CI	p-value	Crude β	95% CI	p-value
Age	0.52	-1.15, 2.19	0.541			
Gender						
Male (ref.)	—	—				
Female	2.68	-2.07, 7.43	0.267			
Year of study						
Year 3 (ref.)	—	—				
Year 4	-2.67	-7.56, 2.21	0.282			
Year 5	-1.11	-5.94, 3.71	0.649			
Posting during the study period						
Paediatric (ref.)	—	—		—	—	
Non-paediatric	-3.91	-8.23, 0.40	0.075	-3.10	-7.38, 1.17	0.154
Online classroom attendance	0.52	-0.01, 1.04	0.055	0.37	-0.16, 0.90	0.174
Family household income						
B40 (ref.)	—	—				
M40	-0.78	-5.24, 3.68	0.730			
T20	-1.69	-7.26, 3.87	0.549			
Internet status during online learning						
Poor (ref.)	—	—				

Medium	5.23	-8.59, 19.1	0.456			
Good	9.83	-3.74, 23.4	0.154			
Very good	8.62	-5.64, 22.9	0.235			
Internet usage frequency						
1-5 hours (ref.)	—	—				
6-10 hours	11.14	-8.61, 30.89	0.267			
11-15 hours	12.59	-7.26, 32.44	0.212			
>15 hours	10.07	-9.08, 29.22	0.301			
Duration of online learning						
1-2 hours (ref.)	—	—		—	—	
2-3 hours	8.83	2.85, 14.8	**0.004**	7.60	1.54, 13.67	**0.014**
> 3 hours	5.84	0.76, 10.9	**0.024**	5.14	0.04, 10.25	**0.048**

$R^2 = 0.068$

No interaction or multicollinearity was found. Model assumptions were met

CHAPTER III

THE REFERENCES AND MATERIALS

3.1

Appendices

3.1.1

Data Collection Sheets

Appendix A

Compiled Questionnaires

Readiness and satisfaction of the online learning among medical students undergoing clinical rotation during COVID-19 pandemic.

SECTION 1

You are offered to participate voluntarily in this research as the undergraduate medical students at USM Kubang Kerian health campus in order to determine the readiness and satisfaction levels towards online learning during COVID-19 pandemic in Malaysia. It is important that you read and understand this research information before agreeing to participate in this study.

You will need to complete the survey form which consisting of demographic data, Online Learning Readiness Scale (OLRS) and E-Course Satisfaction Scale (ECSS) questionnaires. It is estimated to take about 25 minute to complete all questionnaires. If you wish to get the respond on the questionnaire answered, you may provide your email in the section provided. If any accidental findings required intervention, you will be provided a proper channel for consultation with the respective psychologist.

INTRODUCTION

Nowadays, global technological innovations have resulted in various transformations in every aspect of life, from business to educational systems. With this development, the educational settings have been gradually replaced by virtual or online educational platforms from the previously traditional in-class environment.

COVID-19 pandemic that was declared by WHO since 11th March 2020 had affected our educational system at the university level where the teaching and learning process takes

place in online platforms rather than traditional face-to-face environment. However, since online learning is quite a new teaching method and challenging to most of the undergraduate students, perhaps it will affect the readiness and satisfaction levels among them that eventually will affect their academic achievement as well.

PURPOSE OF THE STUDY

To determine the readiness and satisfaction levels among undergraduate medical students in USM Kubang Kerian health campus towards online learning during COVID-19 pandemic and to determine the correlation between them.

PERMISSION

I have been given written information for the above study and understood the information given. I have sufficient time to consider participation in this study and have the opportunity to ask questions and all my questions have been answered satisfactorily. I understand that my participation is voluntary and I can at any time withdraw from the study without giving a reason. I understand the risks and benefits and I freely give my informed consent to participate under the conditions stated. I understand that I must follow the study doctor’s (investigator’s) instructions related to my participation in the study. I understand that study staff, qualified monitors and auditors have direct access to my survey answers. All personal details will be treated as STRICTLY CONFIDENTIAL. By clicking "continue," I agree to participate in this survey.

SECTION 2 - Sociodemographic

1.	Age	Please state: _____ years
2.	Gender	☐ Male ☐ Female
3.	Year of study	☐ Year 3 ☐ Year 4 ☐ Year 5
4.	Posting during recovery movement control order (RMCO)	Please state: _____
5.	Family household income	Please state: RM _____
6.	Classroom Attendance Percentage of presence in organized online teaching (1% - 100%)	Please state: _____ %
7.	Internet status (strength) during online teaching (most of the time)	☐ Poor ☐ Medium ☐ Good ☐ Very good
8.	Internet usage frequency (weekly)	☐ 1-5 hours ☐ 6-10 hours ☐ 11-15 hours ☐ 15 hours and above
9.	Duration of online learning (hours)	☐ < 1 hour ☐ 1-2 hours ☐ 2-3 hours ☐ >3 hours

SECTION 3 – Online Learning Readiness Questionnaire

*Answer/response must be related to posting that have enrolled during recovery movement control order (RMCO) period (starting on 10/06/2020 onwards).

No.	Items	1 Strongly disagree	2 Disagree	3 Unsure	4 Agree	5 Strongly agree
1.	I feel confident in performing the basic functions of Microsoft Office programs (MS Word, MS Excel, and MS PowerPoint).					
2.	I feel confident in my knowledge and skills of how to manage software for online learning					
3.	I feel confident in using the Internet (Google, Yahoo) to find or gather information for online learning.					
4.	I carry out my own study plan					
5.	I seek assistance when facing learning problems.					
6.	I manage time well.					
7.	I set up my learning goals					
8.	I have higher expectations for my learning performance.					
9.	I can direct my own learning progress.					
10.	I am not distracted by other online activities when learning online (instant messages, Internet surfing).					
11.	I repeated the online instructional materials on the basis of my needs.					

12.	I am open to new ideas.					
13.	I have motivation to learn.					
14.	I improve from my mistakes.					
15.	I like to share my ideas with others.					
16.	I feel confident in using online tools (email, discussion) to effectively communicate with others.					
17.	I feel confident in expressing myself (emotions and humor) through text.					
18.	I feel confident in posting questions in online discussions.					

SECTION 4 – E-Course Satisfaction Questionnaire

*Answer/response must be related to posting that have enrolled during recovery movement control order (RMCO) period (starting on 10/06/2020 onwards).

No	Items	5 Strongly agree	4 Agree	3 Unsure	2 Disagree	1 Strongly disagree
1.	Interactive presentation of the course content increased my interest in the course					
2.	I think that the virtual classroom (concurrent) activities that were organized helped me to learn better					
3.	I think that the concurrent (conversational) activities that were organized enabled me to learn better					
4.	I think that the different-time (discussion) activities that were organized enabled me to learn better					
5.	I like to participate in collaborative events (group assignments, forum, etc)					
6.	I am pleased to discuss with my friends and faculty on the forum pages					
7.	Forums helped increase my interaction with students in the system					
8.	E-lesson helped me to meet my social needs (frequency of communication with friends, improvement of relationships with friends,					

	improved quality of relationship with faculty)					
9.	I was able to get help from the instructor whenever I wanted					
10.	The consultancy service I got from the instructor is sufficient					
11.	I have no problem communicating with the instructor					
12.	Faculty member informs me regularly about my learning					
13.	I can easily access the information I am looking on e-lesson					
14.	The design, font's size, type of font, color of the texts on the web pages were designed in the form that it will not distract concentration and increase comprehension					
15.	The visuals on the web pages (floor, shape, picture, graphic and animation) were compatible with each other					
16.	E-lesson system was very functional					
17.	I was able to access teaching materials whenever I want easily					
18.	I am glad to have a help guide about technical problems in the system					
19.	I can access current information in published announcements and news					

20.	Materials in the e-learning environment load fast					
21.	Using technology has increased my interest in the course					
22.	Processing e-lessons independently of time and place allows me to spend time on my other work					
23.	I am happy to take this course as an e-course					
25.	The course that I take with distance education motivates me more than the one I take face to face					
27.	The content is clear and understandable					
28.	Long course contents cause a waste of time					
29.	Assignments and activities offered were directly related to the course objectives					
30.	The feedback on the lessons was clear and informative					
32.	Faculty member clearly expresses their expectations about the course verbally or in the lesson plan					
33.	I think this course meets my learning needs					
34.	I am glad that such an application gave me more responsibility to learn					
35.	The measuring tools and exams offered were sufficient					

3.1.2

Instruction to authors

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ABSTRACT

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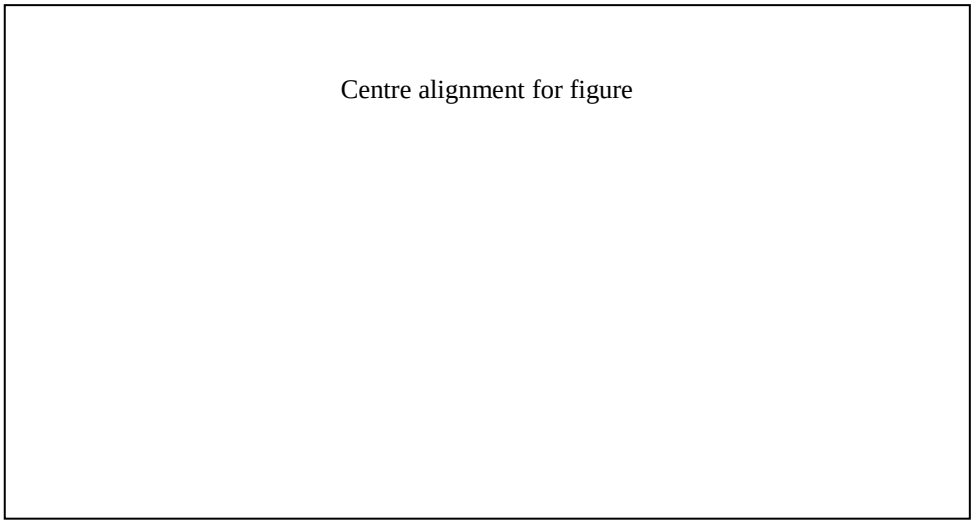

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Table header is centre alignment. Font type is Myriad Pro, bold and 9 pt size. **Insert top and bottom border**
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Table contents is 9 pt size, no border between rows
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Last Row, insert bottom border

Note: Table note is 8 pt size and centre alignment.

ACKNOWLEDGEMENTS

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APPENDIX (if applicable)

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REFERENCES

Authors are responsible for the accuracy of the references. Authors are required to provide the DOI for all references, which are assigned one and are responsible for the accuracy of the references.

The titles of journals should be abbreviated according to the style used in the Index Medicus (https://www.ncbi.nlm.nih.gov/nlmcatalog/journals/)

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Depression is a disease state affecting both the body and the brain, and it contributes to direct and indirect healthcare costs via consequent disability and reduced productivity (1). Depression affects nearly 340 million people worldwide at any given time (2, 3). In clinical population with depression, physical symptoms are common (1, 4–6).

List of References

Standard Journal Article

Number. Author AA, Author BB. Title of article. Name of Journal (abbreviated). Year;Volume number(issue number):page numbers. https://doi.org/doi_identifier

1. Downing SM, Haladyna TM. Validity threats: overcoming interference with proposed interpretations of assessment data. Med Educ. 2004;38(3):327–33. https://doi.org/10.1046/j.1365-2923.2004.01777.x

If there are more than six authors, list the first six authors, followed by et al.

2. Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. Brain Res. 2002;935(1–2):40–6. https://doi.org/10.1016/s0006-8993(02)02445-9

Organisation as author

Number. Organisation AA, Organisation BB, Organisation CC, Organisation DD, Organisation EE. Title of article. Name of Journal (abbreviated). Year;Volume number(issue number):page numbers. https://doi.org/doi_identifier

3. ABIM Foundation, American Board of Internal Medicine, ACPASIM Foundation, American College of Physicians-American Society of Internal Medicine, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. Ann Intern Med. 2002;136:243–6. https://doi.org/10.7326/0003-4819-136-3-200202050-00012

Both personal authors and an organisation as author

Number. Author AA, Author BB, Author CC, Author DD; Organisation EE. Title of article. Name of Journal (abbreviated). Year;Volume number(issue number):page numbers. https://doi.org/doi_identifier

4. Vallancien G, Emberton M, Harving N, van Moorselaar RJ; Alf-One Study Group. Sexual dysfunction in 1,274 European men suffering from lower urinary tract symptoms. J Urol. 2003;169(6):2257–61. https://doi.org/10.1097/01.ju.0000067940.76090.73

No author given

Number. Title of article. Name of Journal (abbreviated). Year;Volume number(issue number):page numbers.

5. 21st century heart solution may have a sting in the tail. BMJ. 2002;325(7357):184.

Books

Personal author(s)

Number. Author AA. Title of book. Place of publishing: Publisher; Year.

6. Lencioni P. The five dysfunctions of a team. San Francisco, CA: Jossey-Bass; 2002.

Editor(s), compiler(s) as author

Number. Author AA, Author BB, Author CC, editors. Title of book. Edition. Place of publishing: Publisher; Year. https://doi.org/doi_identifier

7. Yudkowsky R, Park YS, Downing SM, editors. Assessment in health professions education. 2nd ed. New York: Routledge; 2019. https://doi.org/10.4324/9781315166902

Author(s) and editor(s)

Number. Author AA, Author BB. Title of book. Edition. Editor CC, editor. Place of publishing: Publisher; Year. https://doi.org/doi_identifier

8. Breedlove GK, Schorfheide AM. Adolescent pregnancy. 2nd ed. Wieczorek RR, editor. White Plains (NY): March of Dimes Education Services; 2001.

Organisation(s) as author

Number. Organisation AA; Organisation BB. Title of book. Edition. Place of publishing: Publisher; Year. https://doi.org/doi_identifier

9. National Lawyer's Guild AIDs Network (US); National Gay Rights Advocates (US). AIDS practice manual: a legal and educational guide. 2nd ed. San Francisco: The Network; 1988.

Chapter in a book

Number. Author AA, Author BB, Author CC. Title of article/chapter. In: Editor AA, Editor BB, editors. Title of book. Edition (if applicable). Place of publishing: Publisher; Year. page numbers. https://doi.org/doi_identifier

10. Cizek GJ, Bunch MB. The bookmark method. In: Cizek GJ, Bunch MB, editors. Standard setting. Thousand Oaks, CA: Sage Publications; 2007. p. 154–91. https://doi.org/10.4135/9781412985918

Conference proceedings

Number. Author AA, Author BB, Author CC, editors. Title of paper. Name of conference proceeding; date(s); venue (province/city, country). Place of publishing: Publisher; Year.

11. Harnden P, Joffe JK, Jones WG, editors. Germ cell tumours V. Proceedings of the 5th Germ Cell Tumour Conference; 2001 Sep 13-15; Leeds, UK. New York: Springer; 2002.

Conference paper

Number. Author AA, Author BB. Title of paper. In: Editor AA, Editor BB, Editor CC, Editor DD, Editor EE, editors. Name of proceeding; date(s); venue (province/city, country). Place of publishing: Publisher; Year. Page numbers.

12. Christensen S, Oppacher F. An analysis of Koza's computational effort statistic for genetic programming. In: Foster JA, Lutton E, Miller J, Ryan C, Tettamanzi AG, editors. Genetic programming. EuroGP 2002: Proceedings of the 5th European Conference on Genetic Programming; 2002 Apr 3-5; Kinsdale, Ireland. Berlin: Springer; 2002. p. 182–91.

Scientific or technical report

Number. Organisation/Author AA. Title of report. Place of publishing: Publisher; Year. Page numbers.

13. Scottish Government. Professionalism in nursing, midwifery and allied health professions in Scotland: a report to the coordinating council for the NMAHP contribution to the healthcare quality strategy for NHS Scotland. Edinburgh: Crown, The Scottish Government; 2012. p. 3–38.

Dissertation

Number. Author AA. Title of dissertation. Country: Name of University; Year [cited date (if applicable)]. Available from: URL (if applicable).

14. De Anda MA. The impact of the federal work-study program on first generation college students of color [dissertation]. California: San Francisco State University; 2018 [cited 2020 May 24]. Available from:

http://dspace.calstate.edu/bitstream/handle/10211.3/203876/AS362018EDUCD43.pdf?sequence=1

Other Materials

Newspaper article

Number. Newspaper. Title of news. Date [cited date]. Available from: URL.

15. The Straits Times. Coronavirus: Malaysia confirms first case with travel history to Japan, SE Asia News & Top Stories. 2020 February 27 [cited 2020 April 15]. Available from: https://www.straitstimes.com/asia/se-asia/malaysia-confirms-1st-case-ofcoronavirus-with-travel-history-to-japan

Audiovisual material

Number. Author AA, Author BB. Title of audiovisual [source of audiovisual]. Place of publishing: Publisher; Year.

16. Chason KW, Sallustio S. Hospital preparedness for bioterrorism [videocassette]. Secaucus (NJ): Network for Continuing Medical Education; 2002.

Dictionary and similar references

Number. Title of dictionary. Edition. Place of publishing: Publisher; Year. Word search; page number.

17. Dorland's illustrated medical dictionary. 29th ed. Philadelphia: W.B. Saunders; 2000. Filamin; p. 675.

Unpublished Material

Forthcoming and Preprints

(Note: NLM prefers "Forthcoming" rather than "In press" because not all items will be printed.)

Number. Author AA, Author BB, Author CC, Author DD, Author EE. Title of article. Name of Journal (abbreviated). Forthcoming year.

18. Tian D, Araki H, Stahl E, Bergelson J, Kreitman M. Signature of balancing selection in Arabidopsis. Proc Natl Acad Sci U S A. Forthcoming 2002.

Electronic Material

Number. Author AA, Author BB. Title of electronic material [type of electronic material]. Place of publishing: Publisher; Year.

19. Anderson SC, Poulsen KB. Anderson's electronic atlas of hematology [CD-ROM]. Philadelphia: Lippincott Williams & Wilkins; 2002.

Homepage/Web site

Number. Homepage/website name [Internet]. province/city/country: Organisation; copyright year [cited date]. Available from: URL.

20. eatright.org [Internet]. Chicago: Academy of Nutrition and Dietetics; c2016 [cited 2016 Dec 27]. Available from: https://www.eatright.org/

Part of a homepage/Web site

Number. Homepage/website name [Internet]. Province/city/country: Organisation; copyright year [cited date]. Title of page/article; Available from: URL.

21. American Medical Association [Internet]. Chicago: The Association; c1995-2016 [cited 2016 Dec 27]. Office of International Medicine; [about 2 screens]. Available from: https://www.ama-assn.org/about/office-international-medicine

3.1.3

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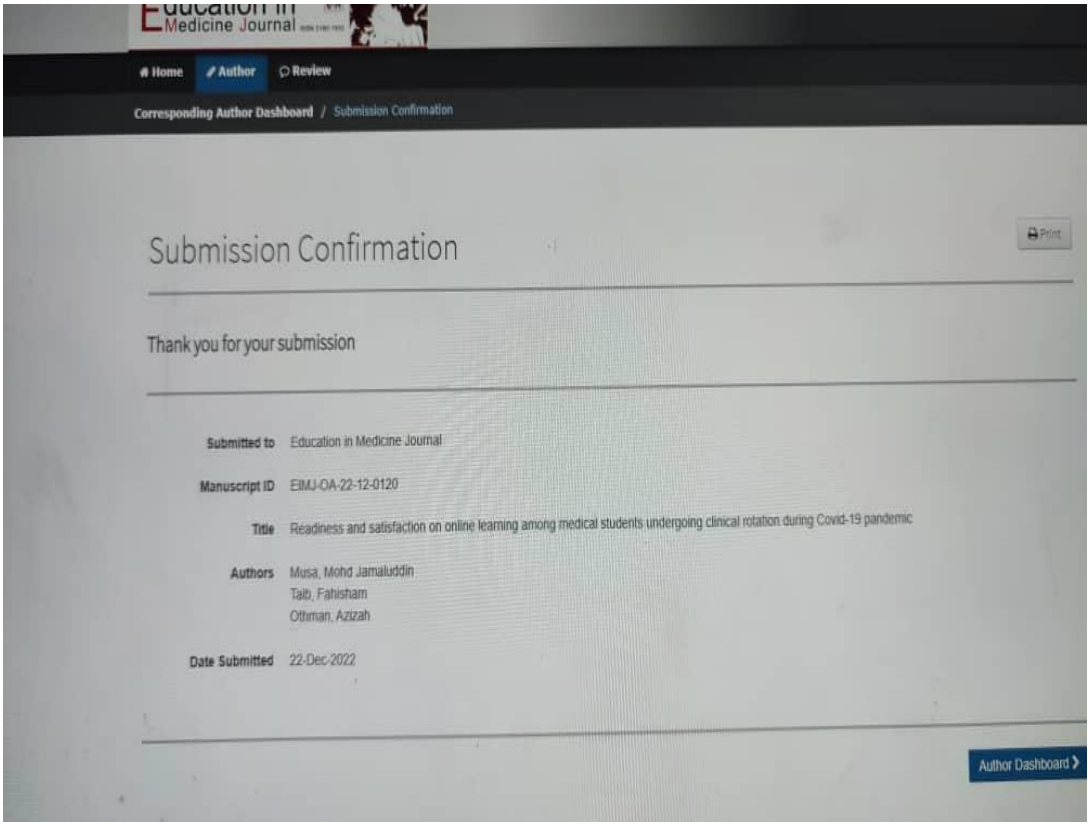

3.1.4

Raw Data in SPSS Software in CD