



## Research article

# Insights from a multi-country study: Lessons for future nursing education from community clinical practice amid the COVID-19 pandemic

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## ABSTRACT

**Background:** The COVID-19 pandemic prompted adjustments in education, raising concerns about students' competency achievement. Despite these changes, aspects like student engagement (SE), basic needs fulfillment (BNF), and stress levels (SL) in nursing students during community-based clinical practice remain understudied.

**Objectives:** This study aims to examine the relationships between students' competencies achievement (SCA), student engagement, basic needs fulfillment, and stress levels among nursing students engaging in community-based clinical practice during the COVID-19 pandemic.

**Design: and Methods:** A cross-sectional online survey was conducted with 451 nursing students from Indonesia, Malaysia, and India. Online questionnaires assessing SCA, SE, BNF, and SL were administered between November and December 2021.

**Results:** The study involved 131 participants from Indonesia, 138 from Malaysia, and 182 from India, with an average age of 22.52. Multivariate analysis, employing linear regression revealed that across the three countries, online student engagement demonstrated the strongest association with SCA (B: 0.701; p-value: 0.0001). However, specific factors—stress levels, learning methods, and study year—showed greater relevance in Indonesia, India, and Malaysia, respectively.

**Conclusions:** The COVID-19 pandemic significantly impacted nursing students' teaching and learning experiences during clinical practice. Enhancing online engagement between academic lecturers and students is imperative for attaining clinical competencies.

## 1. Introduction

The Coronavirus Disease 2019 (COVID-19) has been declared a global pandemic by the World Health Organization (WHO) since March 9, 2020 [1,2]. The disease has spread to various parts of the world, including Indonesia, Malaysia, and India. The increasing

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number of positive cases of COVID-19 and the implementation of several policies to prevent transmission have considerably affected society, especially in education. During the Emergency Spread Era of COVID-19, when the virus spread reached alarming levels and triggered emergency responses at the national or global level, leading the WHO to declare it a Pandemic on March 11, 2020 [1], guidelines for Organizing Learning from Home were applied at all levels of education. They became the reference for implementing the learning transition in higher education [3]. Similar conditions occurred in Malaysia and India.

Online learning, utilized by higher education students, employs diverse digital tools via the Internet to meet educational goals. The Week Without Walls (WWW) policy from Universiti Teknologi Mara, Malaysia, is an adaptation model for learning during the pandemic [4]. Research on nursing students at the University of Malaysia Sabah showed that although most participants were willing to provide services to COVID-19 patients during clinical practice, a few refused to do so [5]. The pandemic also hit India, as observed from their data. Early lockdown and the “Janata Curfew” were implemented to slow the virus spread and restrict mass mobilization and gathering [6,7]. As such, institutions started to use online meeting platforms to provide a learning environment amid social distancing [8].

Universities that have previously implemented an online learning system further maximize its use as a sustainability solution for learning during the pandemic. Clinical practice learning focuses on students’ practical skills and must adapt to the times. However, several obstacles arise from this learning transition. The online learning that is now implemented is not intended to replace contact directly obtained from in-person directly learning [9,10]. Nursing students who are undergoing clinical practice stages must continue to practice both in hospitals and in the community. As a result, they also have a risk in COVID-19 transmission. Studies suggest that frontline healthcare workers working in hospitals have a significantly higher risk of testing positive for COVID-19 compared to the general community [11]. However, asymptomatic and presymptomatic infections, which make up a large proportion of the SARS-CoV-2 infected population in the general community, also play a significant role in COVID-19 transmission [12]. As a result, the activity load of teaching and learning increases and can disrupt the continuity of academic integrity [13–15].

The educational system changes to online learning tremendously, and students need to adapt to achieve their needed competencies. It has been identified that gender influences nursing students’ perceptions of the future nursing profession, with female students viewing the nursing profession as altruistic and maintaining a positive perception. The achievement of competencies among female students during the COVID-19 pandemic in this study is attributed to their positive perceptions of the nursing profession [16]. Several aspects that also changed in this new system are student engagement, essential needs fulfillment, and stress levels. Student engagement leads to the totality of students being actively involved in learning activities behaviorally, cognitively, and emotionally [17,18]. This aspect also relates to the students’ interaction with their time and effort to optimize their experiences and improve their learning outcomes. The distance of online learning results in the need to evaluate this system further. Online learning allows the students’ residences to be a conducive educational place through certain modifications. As such, many students worry about how these changes affect their ability to fulfill their basic needs such as food, sleep, and Internet bills [19].

Students may experience stress due to several changes in the learning system and other equipment needed to support their study to keep in line with the curricula and gain the optimum result of the competencies. Previous literature reported that 48.9 % of students suffer mild stress while 42.6 % had severe stress from online learning during the COVID-19 era [20]. Pope (2021) from Stanford University found that students faced greater stress than before the pandemic due to increased work and less engagement from school, and their relationship with teachers and other students became strained [21]. In addition, the grading, workload, time management, and lack of sleep were also reported as sources of stress for students attending online learning during the pandemic.

Assignments that focus on honing individual abilities can also affect the increasing time spent doing tasks. In addition, the need for COVID-19 screening every time students enter their institutions, including community settings, became mandatory. A previous study reported that students experienced considerable fears when faced with the risk of infection in the clinical setting. Several of these aspects affect the risk of stress and disrupt the fulfillment of basic needs during the transition period to online learning, during which students feel isolated [22]. As such, in addition to paying attention to the learning methods used, building a conducive learning climate to support student learning is essential to developing good student engagement [23,24]. Therefore, further investigation needs to focus on the many benefits and challenges derived from online learning of nursing students conducting clinical practice in a community setting.

The purpose of this study is to examine the relationships between students’ competencies achievement (SCA), student engagement, basic needs fulfillment, and stress levels among nursing students in India, Indonesia and Malaysia, who underwent community-based clinical practice during the COVID-19 pandemic.

## 2. Materials and methods

### 2.1. Design and setting

This study used a descriptive, cross-sectional design. Close-ended questions were provided online to explore the observed variables of Students’ Competencies Achievement (SCA), Student Engagement (SE), Basic Needs Fulfillment (BNF), and Stress Levels (SL) of nursing students in Indonesia, Malaysia, and India.

### 2.2. Sample

Nursing students from Indonesia, Malaysia, and India who underwent clinical practice learning in communities during the transition period of the COVID-19 pandemic were invited to participate as respondents (sample size is 451). Participants were invited

through methods designed to ensure broad and ethical representation of nursing students from Indonesia, Malaysia, and India. Participants were invited to join this study through collaborations with nursing faculties at universities in Indonesia, Malaysia, and India. Initial contacts were made by our research team consisting of researchers in each country, who had established collaborative relationships with these institutions. All students answered an online survey that was uploaded to a commercial internet survey provider ([SurveyMonkey.com](https://www.surveymonkey.com)). The data were collected for two months (November to December 2021) and centralized in one data administrator, meaning that the information gathered from respondents, such as survey responses, were stored and managed in one location or system held by a single data administrator. Before participating in this study, all participants provided written consent. This process involved completing a detailed informed consent form. This form provided comprehensive information about the research objectives, procedures to be followed, risks and benefits, as well as participants' rights to withdraw from the study at any time without consequences. Because this research was conducted online, the informed consent form was integrated into our online survey system. Participants were required to electronically sign the form before proceeding to the survey. This electronic signing was done by selecting the option "I Agree" in the provided checkbox on our online survey platform, SurveyMonkey. The consent was then recorded as part of the survey response data.

### 2.3. Instruments

The study explanation, informed consent, and research instruments were designed and uploaded online through a safe and trusted survey platform. All learning instruments were translated into English and Bahasa Indonesia. The research instruments consisted of seven parts.

#### 1. Students' demographic data

Students' experience carrying out community nursing clinical practice during the COVID-19 pandemic was confirmed with one question before asking other things with two choices of yes or no experience. Sociodemographic data included country, age, gender, year of study, and type of area where the participants carried out the community clinical practice.

#### 2. Learning profile

The Learning profile consisted of four types of questions: 1) learning duration (less than 1 h/more than 1 h); 2) learning method (online/hybrid); 3) application/platform used in clinical practice that can be chosen more than one; and 4) supervision frequency (daily/weekly).

#### 3. Student Engagement

Student engagement was measured using the adopted form of Online Student Engagement (OSE), which consisted of 19 statements on a 5-point Likert-type scale [22]. Respondents were asked to relate their feelings and experiences as students during their clinical practice in the community from 1 (strongly disagree) to 5 (strongly agree). An overall score was calculated based on the mean score of all items, where a high mean indicated high student engagement. The Cronbach's alpha score in a previous study [22] was 0.91.

#### 4. Basic Needs Fulfillment

The Basic Needs Fulfillment questionnaire was adopted from a similar study [24] to measure behavioral changes during students' clinical practice in the community. The section includes 12 items describing perceived fulfillment of their daily needs on a 3-point Likert-type scale, ranging from 0 (never) to 3 (increased). The 12 items consisted of daily intake of: Caffeine, energy drink, carbonated drink, healthy food, fast-food, high-sugar food, sleeping time, exercise, smoking, communication through social media, family time, and pain reliever (analgesic). Two items were also added in a yes/no answer format to identify the use of stress reliever and insomnia medication.

#### 5. Stress Level

Stress level was measured with the use of 14-item Perceived Stress Scale (PSS-14), a brief and easy scale developed by Cohen and Williamson (1988). The questionnaire consists of 14 items on a 5-point Likert-type Scale, ranging from 0 (never) to 4 (very often). The Cronbach's alpha scores in a previous study [25] were 0.88 and 0.83, respectively.

#### 6. Achievement of students' competencies

This section was developed on the basis of nursing students' competencies developed from their clinical practice in the community during the COVID-19 pandemic. The focus was on community health and family nursing competencies in clinical practice. The questionnaire includes 11 items describing the perceived competencies that students achieved after finishing their clinical practice in the community setting. The competencies included the ability to conduct assessment, diagnose, develop nursing care plan, implement nursing care plan; master ethical, professional, cultural, client's safety aspects; and deliver health education and promotion.

Participants were asked to rank their response on a 1–10 Likert-type scale of achievement from 1 (not achieved) to 10 (achieved). All scores were averaged, and a high score indicated a high SCA.

## 2.4. Procedure

A set of questionnaires were uploaded in a commercial Internet survey provider ([SurveyMonkey.com](https://www.surveymonkey.com)) and distributed through the university's online learning network. This online questionnaire also provided an explanation about the research purpose along with the consent button ("yes" ticking box) before processing to the main set of questions. No personal identification was recorded and participants remained anonymous to maintain confidentiality.

## 2.5. Data analysis

This study included univariate to multivariate data analyses. Univariate analysis described all examined variables' mean, median, proportion, and standard deviation. The bivariate analysis investigated the relationship variables between the general characteristics of students, learning methods, SE, BNF, and SL with SCA using the independent *t*-test and crosstab test. This study employed a significance level of  $\alpha < 0.05$  and utilized IBM SPSS Statistics 25 for data analysis. The utilization of P-value  $< 0.25$  in bivariate selection in this analysis serves as a prerequisite for initial modeling [26]. This threshold is not the final P-value utilized by researchers to determine the significance of the analysis. Using medication to relieve stress was observed among respondents in all three countries, albeit with a small and statistically insignificant occurrence for inclusion in the multivariate analysis. However, the researcher opted to include it nonetheless, considering the potential risks associated with the use of medications by students during clinical practice without precise prescriptions. The uni-bivariate results are presented in [Table 1](#). Multivariate analysis with a linear regression model was performed to determine the factors that most likely influence the achievement of student competencies, as presented in [Tables 2–4](#).

## 2.6. Ethical considerations

This study received the approval of each involved country's ethics committee. In Indonesia, the ethical letter was approved by the Faculty of Nursing, Universitas Indonesia ethical committee with a number of letter 220/UN2.F12. D1.2.1/PPM.February 00, 2021. In Malaysia, ethical approval was received from the Medical Research Ethics Committee, University Malaysia Sabah, with approval code JKEtika 3/21. In India, the Institutional Review Board (IRB) was approved by the Institutional Human Ethics Committee, Chettinad Academy with reference number IHEC-II/0019/21.

**Table 1**  
Students' sociodemographic and learning profile (N = 451).

Variables	Total Sample N (%)	Country			p-value
		Indonesia (n = 131)	Malaysia (n = 138)	India (n = 182)	
<b>Demographics</b>					
Gender (Female)	357 (79.2)	114 (23.5)	120 (26.6)	123 (27.3)	0.743
Rural	237 (52.5)	56 (12.4)	55 (12.2)	126 (27.9)	0.171
Age in years (Mean ± SD)	22.52 (±3.766)	25.79 (±5.338)	21.65 (±1.522)	20.82 (±1.352)	0.0001 <sup>a</sup>
4th year student	154 (34.1)	14 (3.1)	42 (9.3)	98 (21.7)	0.003 <sup>a</sup>
<b>Learning Profile</b>					
Supervision duration ≥1 h	291 (64.5)	113 (25.1)	114 (25.3)	64 (14.2)	0.0001 <sup>a</sup>
Supervision Frequency					
Daily	314 (69.6)	64 (14.2)	90 [20]	160 (35.5)	0.045 <sup>a</sup>
Weekly	137 (30.4)	67 (14.9)	48 (10.6)	22 (4.9)	
<b>Learning Method</b>					
Online	126 (27.9)	26 (5.8)	31 (6.9)	69 (15.3)	0.0001 <sup>a</sup>
Hybrid	325 (72.1)	105 (23.3)	107 (23.7)	113 (25.1)	
<b>Learning Platform Used</b>					
Zoom (Yes)	276 (61.2)	116 (25.7)	11 (2.4)	149 [27]	0.0001 <sup>a</sup>
Microsoft Teams (Yes)	124 (27.6)	42 (9.3)	1 (0.2)	81 [18]	0.088
Google Meet (Yes)	254 (56.3)	93 (20.6)	112 (24.8)	49 (10.9)	0.248
Video call (Yes)	62 (13.7)	60 (13.3)	0	2 (0.4)	0.0001 <sup>a</sup>
<b>Achievement of Student Competence (Mean ± SD)</b>	79.08 (±20.734)	92.88 (±12.331)	70.81 (±18.719)	75.41 (±22.157)	
<b>Online Student Engagement (Mean ± SD)</b>	52.43 (±12.403)	53.98 (±11.166)	49.29 (±12.206)	53.69 (±13.011)	0.0001 <sup>a</sup>
<b>Stress Level (Mean ± SD)</b>	30.08 (5.376)	32.46 (±5.593)	28.6 (±4.941)	29.50 (±4.981)	0.0001 <sup>a</sup>
<b>Basic Need Fulfillment</b>					
Eating Healthy Food (Increase)	204 (45.2)	65 (14.4)	31 (6.9)	108 (23.9)	0.002 <sup>a</sup>
Doing Exercise or Sports (Decrease)	219 (48.6)	82 (18.2)	73 (16.2)	64 (14.2)	0.056
Using Medication to Relieve Stress (Yes)	29 (6.4)	2 (0.4)	9 [2]	18 [4]	0.001 <sup>a</sup>
Using Medication to Relieve Insomnia (Yes)	23 (5.1)	2 (0.4)	11 (2.4)	10 (2.2)	0.031 <sup>a</sup>

<sup>a</sup> p-value significant  $< 0.05$ .

**Table 2**  
Bivariate Selection of the students' competencies achievement (SCA) Confounding variables (N = 451).

Variables	The Three Countries	Indonesia (n = 131)	India (n = 182)	Malaysia (n = 138)
	P value	P value	P value	P value
Age	0.0001 <sup>a</sup>	0.324 <sup>b</sup>	0.041 <sup>a</sup>	0.116 <sup>a</sup>
Gender	0.901	0.899	0.183 <sup>a</sup>	0.255 <sup>a</sup>
Study Year	0.0001 <sup>a</sup>	0.758	0.190 <sup>a</sup>	0.001 <sup>a</sup>
Setting	0.126 <sup>a</sup>	0.451		0.376
Learning Method	0.0001 <sup>a</sup>	0.669 <sup>b</sup>	0.005 <sup>a</sup>	0.023 <sup>a</sup>
Zoom	0.0001 <sup>a</sup>	0.788	0.25 <sup>a</sup>	0.004 <sup>a</sup>
Google Meet	0.158 <sup>a</sup>	0.615	0.066 <sup>a</sup>	0.090 <sup>a</sup>
Microsoft Teams	0.072 <sup>a</sup>	0.674	0.363	0.221 <sup>a</sup>
Video Call	0.0001 <sup>a</sup>	0.597	0.547	–
Supervision Duration	0.002 <sup>a</sup>	0.348	0.207 <sup>a</sup>	0.604
Supervision Frequency	0.032 <sup>a</sup>	0.509	0.968	0.783
Online Student Engagement (OSE)	0.0001 <sup>a</sup>	0.018 <sup>a</sup>	0.0001 <sup>a</sup>	0.0001 <sup>a</sup>
Stress Level (SL)	0.0001 <sup>a</sup>	0.013 <sup>a</sup>	0.002 <sup>a</sup>	0.035 <sup>a</sup>
Eating Health Food (EHF)	0.119 <sup>a</sup>	0.063 <sup>a</sup>	0.354	0.760
Doing Exercise or Sports	0.110 <sup>a</sup>	0.369	0.917	0.158 <sup>a</sup>
Using Medication to Relieve Stress	0.006 <sup>a</sup>	0.335	0.217 <sup>a</sup>	0.301 <sup>b</sup>
Using Medication to Relieve Insomnia	0.052 <sup>a</sup>	0.190 <sup>a</sup>	0.908	0.222 <sup>a</sup>

<sup>a</sup> P-value significant  $\leq 0.25$ .

<sup>b</sup> Included to multivariate analysis because of researcher consideration.

### 3. Results

Table 1 depicts the 451 participants' sociodemographic characteristics, learning profile, SCA, SE, BNF, and SL during the COVID-19 pandemic. In these three countries, nursing students were dominated by females, accounting for 357 (79.2 %) respondents. The average age of respondents is 22.52 years old (age range 18–48 years old), and Indonesian nursing students had a higher average (25.79) given that several respondents come from extension programs (students who continue their studies after obtaining their diplomas). During the pandemic, the three countries have carried out hybrid learning (72.1 %) rather than full online learning (27.9 %).

Zoom cloud meeting (61.2 %) was the most used platform during the pandemic, followed by Google Meet (56.3 %), Microsoft Teams (27.6 %), and video calling (13.7 %). The SCA average is 79.08 (SD  $\pm$  20.734), with Indonesia having a competency accomplishment value far above the average of the three countries at 92.88 ( $\pm$ 12.331), and Malaysia is slightly below the average at 70.81 ( $\pm$ 18.719). In general, online student engagement has a low score, with the average score of the three countries at 52.43 ( $\pm$ 12.403) from a maximum range of 95. By contrast, stress on respondents during academic learning shows a relatively high average of 30.08 (5.376) out of a total score of 56. Students in Indonesia had a higher mean stress score of 32.46 ( $\pm$ 5.593) than those in the other two countries.

In assessing essential needs fulfillment, four things were measured: eating healthy food, exercising, using medication to relieve stress, and using medication to relieve insomnia complaint. A total of 204 (45.2 %) respondents said they experienced an increase in eating healthy foods and 219 (48.6 %) experienced an increase in doing sports during the pandemic, but on the other hand, several students used medication to relieve stress (29 respondents) and to overcome insomnia (23 respondents).

Multivariate analysis showed that several factors influence student clinical competency accomplishment in each country and in all of them. Online student engagement (OSE) is the most influential factor (B: 0.701; p-value: 0.0001) on SCA besides age, MS Teams platform, Video call platform, Supervision duration, and students' (SL). In Indonesia, the most influential factor on SCA was students' SL (B: 0.307; p-value: 0.107) followed by OSE and eating healthy food (EHF). Stress level increased the SCA by 0.3 after other significant variables are controlled. Learning methods (B: 5.292; p-value: 0.77) divided into offline, hybrid, and blended learning were identified as the most influential factor on India's SCA in community nursing clinical practice. Online student engagement (B: 0.749; p-value: 0.0001) ranks as the third factor that affects SCA after learning methods and SL. Three factors influence the SCA in Malaysia, namely, study year (B: 6.479; p-value 0.014), OSE (B: 0.749; p-value: 0.0001), and doing exercise or sports (B: 3.877; p-value: 0.028).

### 4. Discussion

This study aims to identify several factors relating to the evaluation of competency achievement of nursing students who carried out clinical practice during the COVID-19 pandemic, especially at the family and community nursing stations in three countries: Indonesia, Malaysia, and India. At least three influential variables are determined, including student involvement in online learning, fulfillment of basic needs, and stress levels of nursing students who are undergoing clinical practice. Most of the participants in this study were women and the average age was 22.52 years. Historically, the role of nurses has been dominated by women, developing from a phenomenon where nursing has been described as a feminine job since the development of the Nightingale nursing education in the mid-19th century; thus, nursing jobs are preferred more by women than by men [28]. Work as a nurse is described as an activity that is full of humility, gentleness, and empathy such that masculine traits that are often assigned to men (e.g., proactive, dominant) are perceived as unsuitable for this career [29].

**Table 3**  
1st multivariate model.

Variable	The Three Countries				Indonesia				India				Malaysia			
	B Coefficient	p-value	R <sup>2</sup>	P	B Coefficient	p-value	R <sup>2</sup>	P	B Coefficient	p-value	R <sup>2</sup>	P	B Coefficient	p-value	R <sup>2</sup>	P
Age	0.634	0.008 <sup>a</sup>	0.348	0.0001 <sup>a</sup>	-1.71	0.382	0.157	0.001 <sup>a</sup>	-0.263	0.823	0.306	0.0001 <sup>a</sup>	-1.160	0.224	0.434	0.0001 <sup>a</sup>
Gender	-								-1.623	0.616			5.777	0.141		
Study Year	0.036	0.973							0.828	0.689			6.117	0.046 <sup>a</sup>		
Setting	0.342	0.838														
Learning Method	3.578	0.071			-0.323	0.9			5.026	0.113			3.391	0.298		
Zoom	-0.612	0.438							-2.710	0.496			0.422	0.580		
Google Meet	-0.339	0.857							-3.387	0.348			1.341	0.725		
Ms. Team	-3.576	0.058 <sup>a</sup>											28.101	0.071		
Video Call	-10.032	0.0001 <sup>a</sup>														
Supervision Duration	-3.929	0.033 <sup>a</sup>							-3.023	0.323						
Supervision Frequency	1.897	0.307														
Online Student Engagement	0.670	0.0001 <sup>a</sup>			0.106	0.277			0.735	0.0001 <sup>a</sup>			0.751	0.0001 <sup>a</sup>		
Stress Level	0.542	0.001 <sup>a</sup>			0.327	0.091			0.949	0.0001 <sup>a</sup>			0.086	0.767		
Eating Health Food	-1.214	0.218			-3791	0.003 <sup>a</sup>										
Doing Exercise/sport	-0.576	0.572											-4.593	0.013 <sup>a</sup>		
Using Medical Relief Stress	0.450	0.902							-1.373	0.775			5.613	0.363		
Using Medical Relief Insomnia	-4.251	0.293			0.199	-10.694							-5.996	0.265		
Constant	43.221				99.83				20.791				-28.278			

<sup>a</sup> P-value significant  $\leq 0.05$ .

**Table 4**  
2nd multivariate model.

Variable	The Three Countries				Indonesia				India				Malaysia			
	B Coefficient	p-value	R <sup>2</sup>	P	B Coefficient	p-value	R <sup>2</sup>	P	B Coefficient	p-value	R <sup>2</sup>	P	B Coefficient	p-value	R <sup>2</sup>	P
Age	0.665	0.004 <sup>a</sup>	0.335	0.0001 <sup>a</sup>			0.141	0.0001 <sup>a</sup>			0.300	0.0001			0.391	0.0001 <sup>a</sup>
Study Year																
Learning Method									5.292 <sup>b</sup>	0.77			6.479 <sup>b</sup>	0.0001 <sup>a</sup>		
Zoom									-2.091	0.583						
Google Meet									-4.520	0.183						
Ms. Team	-3.827	0.035 <sup>a</sup>														
Video Call	-11.279	0.0001 <sup>a</sup>														
Supervision Duration	-4.265	0.13														
Online Student Engagement	0.701 <sup>£</sup>	0.0001 <sup>a</sup>			0.114	0.239			0.749	0.0001 <sup>a</sup>			0.749	0.0001 <sup>a</sup>		
Stress Level	0.595	0.0001 <sup>a</sup>			0.307 <sup>£</sup>	0.107			0.973	0.0001 <sup>a</sup>						
Eating Health Food					-3.952	0.002 <sup>a</sup>										
Doing Exercise/sport													-3.877	0.028 <sup>a</sup>		
Constant	42.877				83.834				8.221				21.106			

<sup>a</sup> P-value is significant at  $\leq 0.05$ .

<sup>b</sup> Most influential factor.

Based on the learning process in the three countries during the COVID-19 pandemic, this study divides the survey into three types of questions, namely, the learning process (duration and time of supervision), learning methods, and platforms used in clinical learning. The results show that the three countries have relatively the same learning process wherein the duration of supervision was more than 1 h every day. In addition, the learning method used during the pandemic is Hybrid (a combination of face-to-face and distance learning). Zoom cloud meeting, an application or learning platform, is also widely used by the three countries to support hybrid learning.

The COVID-19 pandemic, as declared in March 2020, has caused profound impact worldwide in many aspects, including education. The pandemic has disrupted the education system, increased the workload of lecturers and staff, and forced many colleges, universities, and schools to modify learning methods with very limited resources to minimize the risk of infection [30,31]. Hybrid or mixed learning offers an opportunity for higher education to provide interesting learning opportunities to students by combining face-to-face teaching media with online learning opportunities. A study in Indonesia showed that blended learning can be used as an alternative teaching and learning approach for nursing education, especially in the era of the COVID-19 pandemic. Students are satisfied with the blended learning program because it can meet their needs and demands as prospective nurses. Student satisfaction in blended learning is influenced by supporting factors such as interaction, teaching, instructors, education management, and technology [32].

Regarding competency achievement, nursing students from Indonesia show a statistically higher competency assessment score than those in other countries. However, Indonesian nursing students also have higher stress scores on average than Malaysia and India. The application of online learning because of the COVID-19 pandemic poses its challenges which then affect the mental health of nursing students. Due to the COVID-19 Pandemic, all schools were closed, and students and lecturers were forced to continue the learning process using an online platform [33], to which not all students have unrestricted access. Several students experience difficulties in connectivity and electricity problems that ultimately reduce the quality of their learning [27]. This phenomenon can certainly increase students' concerns about the future regarding their academic abilities.

In addition, the experience of nursing students during a pandemic shows that students felt emotional effects, such as feelings of fear, anxiety, and unpreparedness; and the stress felt among nursing students was due to the higher risk of infection from prolonged contact with patients [34,35]. In Canada, several students also experience cancellations or delays in their placements to practice due to safety concerns that can affect their confidence in their nursing competencies and contribute to their anxiety [36]. In Indonesia, the same effect was observed where online learning requires students to be more active in independent learning while taking online classes. The number of assignments received, limited access to online learning, and student dissatisfaction during the online learning process causes difficulties in the lecture material such that they may feel a sense of fear about their academic progress, failure in achieving the expected targets, pressure to be able to learn independently, high concentration in paying attention to lecturers' explanations during classes while being hampered by signals, fatigue due to piling assignments, pressure from parents, and stress from rising Internet quota fees; all of these cause students to feel stressed with their academic life [37].

Student engagement through online learning during the COVID-19 pandemic in the three countries was less than the expected average score. Student engagement is defined as a condition in which students play an active role in the learning process by focusing their time, energy, thoughts, efforts, feelings and manifesting them in action to complete their academic tasks [38]. However, the pandemic has quite affected student engagement in the learning process. Maintaining and fostering student engagement in the online learning process remains one of the challenges facing nursing educators [39]. While the success of students in nursing programs is influenced by their level of involvement in academic learning, one of the main factors that drive student engagement with learning materials is the strong relationship between faculty and students and effective use of technology; thus, students and faculty can have better engagement and collaboration [40,41].

Factors that also need to be considered in online learning during the COVID-19 pandemic is the fulfillment of students' essential needs to support them in online learning. This study shows that several respondents increased their consumption of healthy foods and exercise during the pandemic. Due to online learning, nursing students do not need to rush to campus, and therefore, they have plenty of time to make their own much healthier meals and do sports to increase endurance. Online learning also provides the ability to learn at one's own pace and access diverse teaching materials that can meet various learning needs of nursing students [15,42].

In addition to the positive effects of diet and physical activity, this study also shows adverse effects due to the pandemic. A small number of students use addictive substances to deal with stress and sleep disorders. Some examples include alcohol, tobacco, and vaping products. The impact of the pandemic on students' emotions, such as stress, fear, and several other mood disorders, caused some students to use addictive substances to calm their moods. The use of addictive substances to treat emotional disorders has increased sharply in the last 40 years, even before the pandemic [43], and COVID-19 has brought significant changes to the lives of young people, including university students, with various characteristics of emotional responses. This study recommends increasing online engagement between faculty and students, utilizing flexible learning methods, and providing more intensive emotional support to nursing students during the COVID-19 pandemic. These recommendations are underscored by implications highlighting the need for refining nursing education curricula to integrate technology, address students' emotional well-being, and promote international collaboration in tackling global health challenges. It is hoped that the implementation of these recommendations and understanding of their implications can enrich students' learning experiences and enhance their readiness to face complex clinical situations in the future.

This study acknowledges certain limitations that could introduce potential bias. Notably, the three countries under examination exhibit divergent student populations, rendering direct comparisons of competency achievement unfeasible. Consequently, the study opts for a nuanced description of competency attainment within each country. Moreover, the non-randomized selection of respondents is acknowledged, given the study's focus on students with clinical placement experiences in the community. It is imperative to recognize these limitations when interpreting the study's findings and generalizing them beyond the specified context.



## 5. Conclusion

The study assessed the competency achievements of nursing students undergoing clinical practice learning at community nursing stations in Indonesia, Malaysia, and India during the COVID-19 pandemic, focusing on three key aspects: student engagement in online learning, basic needs fulfillment, and stress levels. Varied competency achievement scores were observed across the three countries. Although Indonesia had a competency achievement score higher than the average of the three countries, their students also experienced higher stress levels compared to those in Malaysia and India. Moreover, changes in lifestyle positively affected the fulfillment of nursing students' living needs, notably in dietary habits and physical activity. However, the pandemic impacted students' stress levels due to connectivity issues, electrical problems, unpreparedness in online learning, and emotional stress. The pandemic constrained lecturer-student interaction, highlighting the inability of technology to entirely replace the learning process. A suggested approach involved a blend of online and limited offline learning. Nursing lecturers were identified as crucial in enhancing students' clinical reasoning skills, enabling effective data collection, problem-solving, decision-making, and quality service provision.

## Data availability statement

Data were generated and stored at Universitas Indonesia. Derived data supporting the findings of this study are available from the corresponding author [AS] on request.

## CRedit authorship contribution statement

**Agus Setiawan:** Writing – review & editing, Writing – original draft, Validation, Supervision, Conceptualization. **Dwi Nurviyandari Kusuma Wati:** Writing – review & editing, Writing – original draft, Supervision, Formal analysis, Conceptualization. **Hamidah Hassan:** Validation, Supervision, Formal analysis, Data curation, Conceptualization. **Hepsibah Sharmil:** Validation, Supervision, Formal analysis, Data curation, Conceptualization. **Sukihananto Sukihananto:** Formal analysis, Data curation. **Syamikar Baridwan Syamsir:** Writing – review & editing, Writing – original draft. **Utami Rachmawati:** Writing – review & editing, Data curation. **Winda Eriska:** Writing – review & editing, Data curation.

## Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Agus Setiawan reports financial support was provided by Universitas Indonesia. Agus Setiawan reports a relationship with Universitas Indonesia that includes: employment.

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