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## Online Learning in Nursing Education during the COVID-19 Pandemic: Stress, Satisfaction, and Academic Performance

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### ABSTRACT

**Background:** Traditional face-to-face instruction swiftly transitioned into online learning during the global COVID-19 outbreak. Students' experiences and academic performance in this new learning platform need evaluation.

**Purpose:** The purpose of this research was to determine the undergraduate nursing students' stress, satisfaction, and academic performance during online learning.

**Methods:** This research was considered a cross-sectional and descriptive-correlational study. The research participants were the second-year undergraduate nursing students from one nursing school in the Philippines. The data were collected using a web-based survey questionnaire and then analyzed using descriptive statistics and Spearman's rho correlation.

**Results:** The results revealed that the undergraduate nursing students considered having online learning during the COVID-19 outbreak to be stressful (44.4%) and very stressful (47.2%). Moreover, the undergraduate nursing students had low satisfaction (37%) and moderate satisfaction (46.3%) having the online learning during the COVID-19 outbreak. The undergraduate nursing students' academic performance were affected by the COVID-19 pandemic and resulted in poor (37%) to fair (50%) academic performance and were considerably (43.6%) and greatly (30.6%) affected by the pandemic. Online learning stress had a significant and inverse correlation with online learning satisfaction ( $p=.000$ ) and academic performance ( $p=.012$ ).

**Conclusion:** Stress negatively impacts the undergraduate nursing students' satisfaction and academic performance. This research suggests that certain measures should be performed to reduce stress and improve the online teaching-learning processes during the COVID-19 outbreak.

**Keywords:** Academic Performance, COVID-19, Online Learning, Satisfaction, Stress.

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## BACKGROUND

The global coronavirus disease 2019 (COVID-19) outbreak has forced schools and universities around the world to switch their face-to-face teaching-learning activities to online, distance, or remote learning ([Masha'al et al., 2020](#)). On 22 January 2021, there were 96,267,473 people were infected by the COVID-19, including 2,082,745 deaths ([World Health Organization, 2021](#)). In the Philippines, there were 509,887 people were infected and 10,136 deaths were caused by the COVID-19 ([Philippine Department of Health, 2021](#)). The number of COVID-19 cases continuously increases and new strains are discovered. Thus, undergraduate nursing students may continue their learning activities through the online platform in the near future ([Güven Özdemir & Sonmez, 2020](#)).

The rapidly increasing numbers of cases and deaths due to the COVID-19 pandemic have triggered stress among students and may result in undesirable impacts on the students' psychological well-being and academic life ([Hussien et al., 2020](#)). Undergraduate nursing students face various stresses threatening their mental health and well-being ([Oducado et al., 2017](#)). Even before the pandemic, many studies have disclosed moderate to high stress levels among the undergraduate nursing students in Brazil ([Mussi et al., 2020](#)) and Spain ([Onieva-Zafra et al., 2020](#)). During the pandemic, the lockdown period also increased the undergraduate nursing students' stress level ([Gallego-Gómez et al., 2020](#)). Most undergraduate nursing students in Nepal ([Subba et al., 2020](#)) and India ([Begam & Devi, 2020](#)) had also experienced a moderate stress level. A moderate to high fear level was also experienced by the undergraduate nursing students in the Philippines ([Oducado et al., 2021](#)).

The unprecedented emergence of COVID-19 may change how future nurses are trained and educated, thus necessitate prompt attention from the nursing academic institutions ([Oducado, & Soriano, 2021](#)). Students' experiences and academic performance in the new learning platform need evaluation. The students' academic performance is a key indicator of quality education ([Oducado et al., 2020](#)). Examining the impact of online learning on the students' academic performance is critical to evaluate the curricular changes ([Amir et al., 2020](#)). In addition, knowing the students' satisfaction with the online learning environment is necessary to pinpoint the strengths, assess the instruction quality, and identify the improvement areas. The students' satisfaction was found to be associated with the students' performance, motivation, retention, program completion rates, and outcomes, thus became an important quality assurance component in education ([British Columbia Ministry of Advanced Education, 2003](#); [Schreiner, 2009](#); [Sockalingam, 2013](#)). Students' satisfaction is among the elements of effective online education ([Fatani, 2020](#)). Students' evaluation related to the various outcomes and experiences associated with their education in a new learning modality were explored and investigated in this study.

## OBJECTIVES

This study assessed the second-year undergraduate nursing students' stress, satisfaction, and academic performance in having online learning during the COVID-19 pandemic from one nursing school in the Philippines and determined the association of stress with satisfaction and academic performance.

## METHODS

### *Research design*

This study used a descriptive-correlational, cross-sectional survey.

### *Research participants and location*

The participants were conveniently selected from the second-year undergraduate nursing students (n=108) of one nursing school in the Philippines.

### *Research instruments*

This study used a survey questionnaire based on the relevant and related studies and literature. Students were first asked about their demographic profile and internet use. To assess stress, the students were inquired “How stressful is online learning?” and “How stressful is online learning during the pandemic?” with the responses of “1-Not very stressful” to “5-Very stressful”. The satisfaction scale was adopted from the study of [Strong et al. \(2012\)](#) to assess the students’ satisfaction with online learning. The scale consisted of 7 items and presented in a 5-point Likert scale format ranging from “1-Strongly disagree” to “5-Strongly agree”. The scale for this study had high reliability with Cronbach’s alpha of .903. The following scale of means was used to interpret the students’ general satisfaction: Very low = 1.00-1.50, Low = 1.51-2.50, Moderate = 2.51-3.50, High = 3.51-4.50, and Very high = 4.51-5.00. The items for satisfaction with different forms of online learning as well as the students’ performance and expectations of online learning were taken from the research conducted by [Aristovnik et al. \(2020ab\)](#). The students’ academic performance was determined following the approach cited by [Terry & Peck \(2020\)](#). In this study, the students were asked to answer “How would you rate your academic performance as compared with your peers or classmates during this COVID-19 pandemic?” with the responses ranging from “1-Very poor” to “5-Very good”. Following the research work of [Mahdy \(2020\)](#), the students were likewise asked “How did COVID-19 pandemic affect your academic performance?” and was answerable by “1-Not affected” to “5-Greatly affected”. Students’ satisfaction with their current academic performance was also assessed. Three items on recommendation were adopted from the study of [Almusharraf & Khahro \(2020\)](#).

### *Data collection and ethical consideration*

Online data collection was conducted approaching the end of the first Semester in January 2021. The online, distance, and flexible learning methods were implemented in the first semester of the academic year 2020-2021 to mitigate the spread of coronavirus at schools. Ethical considerations in conducting academic research were applied. Before proceeding to the actual survey, the purpose of this study was clearly explained. Participants were also asked to respond whether or not they were willing to participate in the research.

### *Data analysis*

For data analysis, descriptive statistics (mean, standard deviation, frequency, and percentage) as well as Spearman’s rho were used via the SPSS version 23. The level of significance was set at  $\alpha = .05$ .

## RESULTS

Table 1 shows that the participants’ average age was 19.91 years and the average time spent daily for online learning was 7.20 hours. Most students were females (70.4%) with middle-income status (89.8%) and from the town areas (53.7%). Smart or mobile phone (57.4%) and laptop (38%) were commonly used to connect to the internet for online learning and the majority (75%) had a somewhat stable internet connection.

**Table 1.** Profile and internet use

<b>Profile and internet use</b>	<b>M</b>	<b>SD</b>	<b>f</b>	<b>%</b>
Age	19.91	.42		
Hours spent daily for online learning	7.20	3.86		
Sex				
Male			32	29.6
Female			76	70.4
Residence				
City/Urban			50	46.3
Town/Rural			58	53.7
Income status				
High			1	.9
Middle			97	89.8
Low			10	9.3
Device commonly used to connect Internet				
Smart or mobile phone			62	57.4
Laptop			41	38
Tablet/Ipad			3	2.8
Desktop computer			2	1.9
Stability of Internet connection				
Very stable			8	7.4
Somewhat stable			81	75
Not stable			19	17.6

Table 2 shows that most (61.1%) undergraduate nursing students considered online learning stressful. The undergraduate nursing students considered that online learning during the COVID-19 outbreak was stressful (44.4%) and very stressful (47.2%). Moreover, Table 3 shows that 37% of the undergraduate nursing students had low satisfaction and 46.3% had moderate satisfaction towards online learning. In terms of academic performance, 43.6% were considerably affected, while 30.6% were greatly affected by the pandemic. The undergraduate nursing students' rated their academic performance to be poor (37%) and fair (50%). Moreover, the undergraduate nursing students were not satisfied (42.6%) and unsure (34.3%) with their current academic performance.

**Table 2.** Online learning stress, satisfaction, and academic performance

<b>Stress</b>	<b>f</b>	<b>%</b>
Online learning stress		
Very stressful	29	26.9
Stressful	66	61.1
Unsure	10	9.3
Not stressful	3	2.8
Not very stressful	-	-
Stress in online learning during COVID-19 outbreak		
Very stressful	51	47.2
Stressful	48	44.4
Unsure	6	5.6
Not stressful	3	3
Not very stressful	-	-

<b>Satisfaction</b>		
Very high	1	.9
High	5	4.6
Moderate	50	46.3
Low	40	37
Very low	12	11.1
<b>Academic performance</b>		
Academic performance compared with peers or classmates		
Very good	-	-
Good	10	9.3
Fair	54	50
Poor	40	37
Very poor	4	3.7
How COVID-19 pandemic affected academic performance		
Greatly affected	33	30.6
Considerably affected	46	42.6
Moderately affected	23	21.3
Slightly affected	6	5.6
Not affected	-	-
Satisfaction with current academic performance in online learning		
Very satisfied	-	-
Satisfied	12	12
Neither satisfied nor dissatisfied	37	34.3
Not satisfied	46	42.6
Not very satisfied	12	11.1

Table 3 shows that among the online learning forms presented, the online with a video recording (not in real-time) obtained the highest satisfaction for both lecture and practical class with a mean score of 3.51 (SD=.96) and 3.52 (1.03), respectively. On the other hand, the online with an audio recording (not in real-time) obtained the lowest satisfaction mean score for both lecture (M=3.09, SD=.1.02) and practical (M=3.06, SD=1.01) class.

**Table 3.** Satisfaction with different online learning forms

online learning Forms	Lecture		Practical	
	M	SD	M	SD
Online in real-time (videoconference)	3.19	.98	3.45	1.01
Online with a video recording (not in real-time)	3.51	.96	3.52	1.03
Online with an audio recording (not in real-time)	3.09	1.02	3.06	1.01
Online by sending presentations to students	3.34	1.10	3.34	1.15
Written communication (forums, chat, etc.)	3.34	1.07	3.42	1.08

Table 4 shows that most (85.2%) undergraduate nursing students agreed and strongly agreed that it was more difficult to focus during online learning when compared to on-site or face-to-face learning. A little more than half (56.4%) of the undergraduate nursing students agreed and strongly agreed that their performance worsened since the on-site or face-to-face classes were canceled.

**Table 4.** Students’ performance and expectation of online learning

Students’ performance and expectation	Agree/ Strongly agree	
	f	%
More difficult for me to focus during online learning	92	85.2
Performance improved since on-site classes were canceled	6	5.6
Performance worsened since on-site classes were canceled	61	56.4
Adapted well to the new teaching and learning experience	10	9.2
Can master the skills taught in class	29	26.9
Can figure out how to do the most difficult classwork	16	14.9

Table 5 shows that the undergraduate nursing students highly recommend blended learning or a combination of online and face-to-face learning (M=4.02, SD=1.02). The undergraduate nursing students would also recommend learning using only face-to-face learning in the classrooms in the future (M=3.94, SD=.83). However, the undergraduate nursing students were less likely to recommend learning using only online classes in the future (M=1.83, SD=.93).

**Table 5.** Online learning Recommendations

Recommendation	M	SD
I recommend only using online classes in the future.	1.83	.93
I recommend only using face-to-face in the classrooms in the future.	3.94	.83
I recommend using blended learning in the future.	4.02	1.02

Table 6 shows that there was a significant negative correlation ( $r_s = -.370$ ,  $p = .000$ ) between the stress perception to online learning during the COVID-19 pandemic and online learning satisfaction. Furthermore, there was a significant negative correlation ( $r_s = -.240$ ,  $p = .012$ ) between stress perception to online learning and academic performance during the COVID-19 pandemic.

**Table 6.** Correlation of online learning stress to satisfaction and academic performance

Variables	Spearman’s rho	p-value
Online learning satisfaction	-.370	.000
Academic performance	-.240	.012

**DISCUSSION**

This research investigated the undergraduate nursing students’ stress, satisfaction, and academic performance towards the implementation of online learning during the COVID-19 pandemic. In this study, the undergraduate nursing students found that online learning during the COVID-19 outbreak was considered stressful and even very stressful. In the context of pandemic and online learning, a moderate to high stress level among the students in the virtual classrooms during the COVID-19 outbreak was similarly reported in a study conducted in the Kingdom of Saudi Arabia (AlAteeq et al., 2020). Remote electronic exams were also found more stressful by one-third of medical students (Elsalem et al., 2020). The findings of this study suggested that stress was a major issue in online learning among the undergraduate nursing students during the COVID-19 pandemic.

It was also demonstrated in this study that nearly half of the students were not satisfied with online learning. Similarly, almost half of the university students in Lebanon

were dissatisfied with their online learning experience ([Fawaz & Samaha, 2020](#)). Negative attitudes and perceptions towards online learning were also reported among the undergraduate nursing students in Egypt ([Diab & Elgahsh, 2020](#)), Nepal ([Koirala et al., 2020](#)), and the Philippines ([Oducado, & Soriano, 2021](#)). Likewise, only less than half of the dentistry students in Indonesia preferred distance learning ([Amir et al., 2020](#)). It was also noted that there were differences in online education and satisfaction between countries like Saudi Arabia and Egypt ([Hussien et al., 2020](#)). Unfortunately, we were not able to fully uncover the sources of students' dissatisfaction in this study. Not all components of nursing education can be digitally performed, such as those related to the courses with more practical aspects. Students may struggle to learn the courses' practical side possibly leading to dissatisfaction. A study found that most health-science students agreed that e-learning was not effective in acquiring their clinical and technical skills since these skills were best learned in laboratories and clinical placements ([Abbasi et al., 2020](#)). Veterinary medical students also reported that practical lessons were not easy to learn online ([Mahdy, 2020](#)). Besides, the current nursing curriculum in the country was not technically designed for online learning in these unprecedented times. Students may not also have expected the academic demands required in online learning. The results from a global survey disclosed that the students reported increased workload during online learning ([Aristovnik et al., 2020](#)). Notably, only a few students in this study had a very stable internet connection. This may have affected the online course delivery and eventually influenced the students' satisfaction with the online learning platform. Unfortunately, the Internet infrastructure of the Philippines still lags behind among the developing countries in Asia ([Salac & Kim, 2016](#)). The economic expenses for online classes had also been reported among the undergraduate nursing students in Nepal ([Deo et al., 2020](#)). A global survey among the higher education students also reported the problems with Internet connectivity ([Aristovnik et al., 2020](#)). Nonetheless, the overall effect of the above-mentioned factors may have resulted in the undergraduate nursing students' dissatisfaction. The result of this study calls for the curriculum planners to carefully design and plan the online curriculum for nursing and the other health-related sciences with practical courses in the succeeding semesters or even beyond pandemic. Nursing institutions should also consider factors in the literature influencing online learning quality ([Elumalai et al., 2020](#)).

Although half of the students in this study had acceptable or fair academic performance, it cannot be neglected that more than one-third of the students also reported poor academic performance. It is also remarkable that the pandemic has significantly affected the students' performance at school. Similarly, the COVID-19 pandemic lockdown had affected the veterinary medical students' academic performance ([Mahdy, 2020](#)). On the contrary, online learning positively improved the undergraduate nursing students' academic performance in Spain ([Gallego-Gómez et al., 2020](#)). The variation in this research results may be attributed to the different ways of assessing the academic performance of the students.

It was also demonstrated in this study that stress had a significant and negative inverse relationship with the students' satisfaction and academic performance toward online learning. The research findings indicated that a higher stress level led to lower satisfaction and poorer academic performance with reference to online learning. Similarly, a study conducted among the undergraduate nursing students in Spain found that academic performance was better among students reporting lesser stress ([Gallego-Gómez et al., 2020](#)). Also, a study among the undergraduate nursing students in the Philippines found that as students' stress level increased, their academic performance decreased ([Llego et al., 2018](#)). A significant negative correlation was also noted between satisfaction with e-learning and



stress among the university students in Lebanon during the COVID-19 outbreak ([Fawaz & Samaha, 2020](#)). Stress remarkably contributes to the students' satisfaction and academic performance. The results of this study suggested that the undergraduate nursing students may benefit from the strategies to manage their stress in virtual learning during the COVID-19 pandemic. Academic nursing institutions, curriculum planners, and nursing educators play important parts in addressing these challenges in the era of the COVID-19 pandemic and beyond.

This study has several limitations. This study was limited only to the sophomore undergraduate nursing students in one nursing school relying on students' self-report, and the study design cannot infer the causality between variables. The instruments used in this study also require robust assessments of its psychometric properties. The findings of this study were just preliminary and not yet conclusive. Additional research is greatly required to validate the findings of this study.

### CONCLUSION

The COVID-19 pandemic has substantially affected the undergraduate nursing students' academic performance and resulted in unparalleled stressful situations. Stress significantly influences the students' satisfaction and academic performance. This research highlights that online learning stress negatively impacts students' satisfaction and academic performance in the context of the COVID-19 outbreak. The study suggests that interventions must be developed to reduce stress among the undergraduate nursing students and help them cope with the academic challenges and demands they face during the pandemic. While online learning may be a valuable solution to mitigate the virus transmission during the COVID-19 outbreak, measures should be undertaken to improve the methods employed in the current learning environment to meet the students' learning needs. Rethinking how nursing education should be delivered in the succeeding months of the pandemic may be greatly needed. Gradual resumption of face-to-face instruction may be initiated once the safety of students is safeguarded. In addition, a blended format with limited face-to-face contact may be considered. Nonetheless, the findings of this research suggest adopting student-centered interventions. The undergraduate nursing students may benefit from the added psychological and academic support during the COVID-19 health crisis which had unparalleled impacts on nursing education.

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### CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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