



HAL
open science

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

Ryan Michael Oducado, Homelo V Estoque

► **To cite this version:**

Ryan Michael Oducado, Homelo V Estoque. Online Learning in Nursing Education During the COVID-19 Pandemic: Stress, Satisfaction, and Academic Performance. *Journal of Nursing Practice*, 2021, 4 (2), pp.143 - 153. 10.30994/jnp.v4i2.128 . hal-03238205

HAL Id: hal-03238205

<https://hal.science/hal-03238205v1>

Submitted on 27 May 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

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

Ryan Michael F Oducado¹, Homelo V. Estoque²

¹West Visayas State University, Philippines

²Far Eastern University, Philippines

Corresponding author: rmoducado@wvsu.edu.ph

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.

Received January, 23, 2021; Revised February 28, 2021; Accepted March 2, 2021

DOI: <https://doi.org/10.30994/jnp.v4i2.128>



The Journal of Nursing Practice, its website, and the articles published there in are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

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

| Profile and internet use | M | SD | f | % |
|--|----------|-----------|----------|----------|
| 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

| Stress | f | % |
|--|----------|----------|
| 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 | - | - |

| | | |
|---|----|------|
| Satisfaction | | |
| Very high | 1 | .9 |
| High | 5 | 4.6 |
| Moderate | 50 | 46.3 |
| Low | 40 | 37 |
| Very low | 12 | 11.1 |
| Academic performance | | |
| 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.

ACKNOWLEDGMENTS

The authors would like to thank the participants of this study.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

- Abbasi, M. S., Ahmed, N., Sajjad, B., Alshahrani, A., Saeed, S., Sarfaraz, S., ... & Abduljabbar, T. (2020). E-Learning perception and satisfaction among health sciences students amid the COVID-19 pandemic. *Work*, 67 (3), 549-556. <https://doi.org/10.3233/WOR-203308>
- Almusharraf, N., & Khahro, S. (2020). Students satisfaction with online learning experiences during the COVID-19 pandemic. *International Journal of Emerging Technologies in Learning (IJET)*, 15(21), 246-267. <https://doi.org/10.3991/ijet.v15i21.15647>
- AlAteeq, D. A., Aljhani, S., & AlEesa, D. (2020). Perceived stress among students in virtual classrooms during the COVID-19 outbreak in KSA. *Journal of Taibah University Medical Sciences*, 15(5), 398-403. <https://doi.org/10.1016/j.jtumed.2020.07.004>
- Amir, L. R., Tanti, I., Maharani, D. A., Wimardhani, Y. S., Julia, V., Sulijaya, B., & Puspitawati, R. (2020). Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia. *BMC Medical Education*, 20(1), 1-8. <https://doi.org/10.1186/s12909-020-02312-0>
- Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: a global perspective. *Sustainability*, 12(20):8438. <https://doi.org/10.3390/su12208438>
- Aristovnik, A.; Keržič, D.; Ravšelj, D.; Tomaževič, N.; Umek, L. (2020). *A global student survey "Impacts of the covid-19 pandemic on life of higher education students" Methodological framework.* <http://www.covidsoclab.org/wp-content/uploads/2020/06/Covid19-Methodological-Framework-17062020.pdf>
- Begam, B., & Devi, K. (2020). A study to assess the perceived stress among nursing students during COVID-19 lockdown. *International Journal of Science and Healthcare Research*, 5(4), 388-393.
- British Columbia Ministry of Advanced Education (2003). understanding student satisfaction. *CEISS Research & IT Solutions*, 3 (1), https://www.kpu.ca/sites/default/files/downloads/Understanding_Student_Outcome_s6359.pdf
- Deo, P. K., Budhathoki, S., Raut, J., Adhikari, B., & Shrestha, J. (2020). Factors associated with perceived stress, anxiety, depression, insomnia during COVID-19 outbreak among nursing students. *International Journal of Science and Research*, 9(9), 23-29. https://www.ijsr.net/search_index_results_paperid.php?id=SR20826170002
- Diab, G. M. A. E. H., & Elgahsh, N. F. (2020). E-learning during COVID-19 pandemic: Obstacles faced nursing students and its effect on their attitudes while applying it. *American Journal of Nursing*, 9(4), 300-314. <https://doi.org/10.11648/j.ajns.20200904.33>
- Elumalai, K. V., Sankar, J. P., R, K., John, J. A., Menon, N., Alqahtani, M. S. N., & Abumelha. M. A. (2020). Factors affecting the quality of e-learning during the COVID-19 pandemic from the perspective of higher education students. *Journal of Information Technology Education: Research*, 19, 731-753. <https://doi.org/10.28945/4628>
- Elsalem, L., Al-Azzam, N., Jum'ah, A. A., Obeidat, N., Sindiani, A. M., & Kheirallah, K. A. (2020). Stress and behavioral changes with remote E-exams during the Covid-19 pandemic: A cross-sectional study among undergraduates of medical sciences. *Annals of Medicine and Surgery*, 60, 271-279. <https://doi.org/10.1016/j.amsu.2020.10.058>

- Fatani, T. H. (2020). Student satisfaction with videoconferencing teaching quality during the COVID-19 pandemic. *BMC Medical Education*, 20(1), 1-8. <https://doi.org/10.1186/s12909-020-02310-2>
- Fawaz, M., & Samaha, A. (2020). E-learning: Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine. *Nursing Forum*. <https://doi.org/10.1111/nuf.12521>
- Gallego-Gómez, J. I., Campillo-Cano, M., Carrión-Martínez, A., Balanza, S., Rodríguez-González-Moro, M. T., Simonelli-Muñoz, A. J., & Rivera-Caravaca, J. M. (2020). The COVID-19 pandemic and its impact on homebound nursing students. *International Journal of Environmental Research and Public Health*, 17(20), 7383. <https://doi.org/10.3390/ijerph17207383>
- Güven Özdemir, N., & Sonmez, M. (2020). The relationship between nursing students' technology addiction levels and attitudes toward e-learning during the COVID-19 pandemic: A cross-sectional study. *Perspectives in Psychiatric Care*. <https://doi.org/10.1111/ppc.12710>
- Hussien, R. M., Elkayal, M. M., & Shahin, M. A. H. (2020). Emotional intelligence and uncertainty among undergraduate nursing students during the COVID-19 pandemic outbreak: A comparative study. *The Open Nursing Journal*, 14(1). <https://doi.org/10.2174/1874434602014010220>
- Koirala, D., Silwal, M., Gurung, S., Bhattarai, M., & KC, V. K. Perception towards online classes during COVID-19 among nursing students of a medical college of Kaski District, Nepal. *Journal of Biomedical Research & Environmental Sciences*, 1(6), 249-255. <https://doi.org/10.37871/jbres1151>
- Llego, J., Gabriel, E., & Corpus, J. (2018). A correlational study on the stress level and academic performance of nursing students. *Journal of Basic and Applied Research*, 4(4), 83-87. <https://ssrn.com/abstract=3306863>
- Mahdy, M. (2020). The impact of COVID-19 pandemic on the academic performance of veterinary medical students. *Frontiers in Veterinary Science*. <https://doi.org/10.3389/fvets.2020.594261>
- Masha'al, D., Rababa, M., & Shahrou, G. (2020). Distance learning-related stress among undergraduate nursing students during the COVID-19 pandemic. *Journal of Nursing Education*, 59(12), 666-674. <https://doi.org/10.3928/01484834-20201118-03>
- Mussi, F. C., Pires, C. G. D. S., Silva, R. M. D., Macedo, T. T. S. D., & Santos, C. A. D. S. T. (2020). Stress level among undergraduate nursing students related to the training phase and sociodemographic factors. *Revista Latino-Americana de Enfermagem*, 28. <https://doi.org/10.1590/1518-8345.3036.3209>
- Oducado, R. M. F., Frigillano, P. R. S., Gunce, J. J. T., Jover, P. L. B., Meliton, P. N., & Pangilinan, K. T. (2017). Guidance needs of nursing students in Iloilo City, Philippines. *PEERS Inc. Multidisciplinary Research Journal*, 1(2), 35-47. <http://hdl.handle.net/10755/17285>
- Oducado, R. M. F., Sotelo, M., Ramirez, L. M., Habaña, M., & Belo-Delariarte, R. G. (2020). English language proficiency and its relationship with academic performance and the nurse licensure examination. *Nurse Media Journal of Nursing*, 10(1), 46-56. <https://doi.org/10.14710/nmjn.v10i1.28564>
- Oducado, R. M. F., & Soriano, G. P. (2021). Shifting the Education Paradigm in the Midst of COVID-19 Pandemic: Nursing Students' Attitude Toward e-Learning. [researchgate](https://www.researchgate.net/publication/350811111).

- Oducado, R. M. F., Tuppal, C. P., Estoque, H. V., Sadang, J. M., Superio, D. L., Real, D. V. C., ... & Rosa, R. D. D. (2021b). Internet use, eHealth literacy and fear of COVID-19 among nursing students in the Philippines. *International Journal of Educational Research and Innovation*,(15). <https://doi.org/10.31219/osf.io/amn63>
- Onieva-Zafra, M. D., Fernández-Muñoz, J. J., Fernández-Martínez, E., García-Sánchez, F. J., Abreu-Sánchez, A., & Parra-Fernández, M. L. (2020). Anxiety, perceived stress and coping strategies in nursing students: A cross-sectional correlational descriptive study. *BMC Medical Education*, 20, 370. <https://doi.org/10.1186/s12909-020-02294-z>
- Philippine Department of Health. (2021). *DOH COVID-19 bulleting # 314*. <https://doh.gov.ph/covid19casebulletin314>
- Salac, R.A., & Kim, Y.S. (2016). A study on the internet connectivity in the Philippines. *Asia Pacific Journal of Business Review*, 1(1): 67-88. <https://doi.org/10.20522/APJBR.2016.1.1.67>
- Schreiner, L. A. (2009). Linking student satisfaction and retention. *Noel-Levitz, Coralville, IA*. <https://learn.ruffalonl.com/rs/395-EOG-977/images/LinkingStudentSatis0809.pdf>
- Strong, R., Irby, T. L., Wynn, J. T., & McClure, M. M. (2012). Investigating students' satisfaction with elearning courses: The effect of learning environment and social presence. *Journal of Agricultural Education*, 53(3). <https://doi.org/1010.5032/jae.2012.03098>
- Sockalingam, N. (2013). The Relation between Student Satisfaction and Student Performance in Blended Learning Curricula. *International Journal of Learning: Annual Review*, 18(12).
- Subba, R., Subba, H. K., Singh, J. P., & Mehta, R. K. (2020). Psychological impact and coping strategies of nursing students during the outbreak of coronavirus disease in Nepal. *Asian Journal of Multidisciplinary Studies*, 8, 9.
- Terry, D., & Peck, B. (2020). Academic and clinical performance among nursing students: What's grit go to do with it?. *Nurse Education Today*, 88, 104371. <https://doi.org/10.1016/j.nedt.2020.104371>
- World Health Organization (2021). *WHO coronavirus disease (COVID-19) dashboard*. https://covid19.who.int/?gclid=Cj0KCQIAjKqABhDLARIsABbJrGk5XbwzUK408jUSvcOeCsZyZUDMkKbPC9TGqk1c9J10-aH9FG16Y0UaAp3bEALw_wcB