Shifting the Education Paradigm amid the COVID-19 Pandemic: Nursing Students' Attitude to E-Learning

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Abstract

The unprecedented emergence of COVID-19 has disrupted education and has led to the rise of e-learning. The shift from the traditional delivery of instruction to online learning brings about varying perceptions that necessitates attention and exploration. This study examined nursing students' attitudes towards e-learning in two selected nursing schools in the Philippines. This study used a descriptive cross-sectional design with 111 nursing students in a public and a private nursing school as study participants. The data were collected via an online survey tool and were analysed using the Mann-Whitney U test and the Kruskal-Wallis H test. The results indicated that most nursing students had intermediate computer competency (74.8%) and somewhat stable internet connection (66.7%). They generally had negative (40.5%) and ambivalent attitudes (30.6%) towards e-learning. The nursing students considered e-learning to be impersonal and to lack feeling (80.18%) and that it results in less student–teacher interaction (75.66%). There were no significant differences ($p > .05$) in the e-learning attitude according to the type of school, gender, ownership of a computer, level of computer competency, stability connection and internet usage. Although not statistically significant, those students with stable internet connections appear to have a better attitude towards e-learning. Ambivalence and negative attitudes seem to dominate nursing students' attitudes towards e-learning in the times of the COVID-19 pandemic. Nursing schools must rectify the negative attitudes of students towards e-learning and must take measures to improve students' experiences in the virtual learning environment to ensure that effective learning is never compromised amid the health crisis.

Keywords: attitude, COVID-19, e-learning, nursing students, online learning

Introduction

The unprecedented emergence of COVID-19 has disrupted nursing education and necessitates prompt attention from nursing academic institutions. The profound impact of the health crisis may forever change the way in which future nurses are trained and educated. Traditionally, theoretical classroom instruction and related learning experiences or clinical placements of students are done face to face (Oducado, Amboy, et al. 2019). In response to the massive disturbance brought about by the COVID-19, the education sector is experiencing a paradigm shift. The pandemic has resulted in transitioning from on-campus, face-to-face learning to the rise of and reliance on e-learning by which teaching and learning are undertaken distantly or remotely and in digital spaces, virtual environments, or online platforms (Li and Lilani 2020). E-learning refers to the learning of nursing students realised in an online environment (Voutilainen, Saaranen, and Sormunen. 2017) and the use of computer-based technologies and the internet to facilitate learning and teaching (Mahmoud, El Magrabi, and Mohamed 2015). However, no single definition can truly capture the meaning of e-learning (Uprichard 2020).

In this time of crisis, the use of information technology is bound to increase and therefore technology plays a vital role in creating fertile opportunities for transformation in teaching and learning (Raheem and Khan 2020). More than ever, there is more considerable attention to the integration of educational technology and e-learning strategies in higher education (Williams et al. 2011). Much interest has been given to e-learning in the health sciences education. It offers better access to learning resources online (Regmi and Jones 2020) where factors such as geographical location and time elements of traditional face-to-face teaching can otherwise make it difficult (McKenzie and Murray 2010). Notably, even before the COVID-19 pandemic, nursing education in some countries has seen a progressive development in e-learning (Betihavas et al. 2016).

Despite the rapid developments and the exponential growth in information, communication and technology paving the way for online education worldwide in the recent years, e-learning or online learning was not the ideal or preferred choice of teaching and learning in a developing country such as the Philippines; not until the COVID-19 pandemic. However, the continued increase of COVID-19 cases and as the pandemic continues to evolve in a non-linear manner, schools, colleges, and universities around the world are continually moving towards a more flexible learning scheme in the delivery of instruction including e-learning or online learning. Because extraordinary times require extraordinary measures, the sudden shift from the conventional, face-to-face classroom set-up and the adoption of online learning will potentially continue despite the pandemic (Li and Lilani 2020). Although online learning provides fertile transformative potential changing the landscape of education by increasing educational opportunities and stimulating the growth of fresh pedagogical

and new instructive methods, some contend that this rapid and unplanned move to online learning could result in negative pedagogical outcomes and lead to a poor user experience that is not conducive to sustained growth (Li and Lilani 2020; Platt, Amber, and Yu 2014).

As nursing schools embrace e-learning during and beyond the COVID-19 crisis, academic nursing institutions must first assess students' attitude to achieve successful transition and transformation to e-learning. And as the Commission of Higher Education in the Philippines pushes for the adoption of flexible learning in the reopening of schools in August or September 2020, it may be necessary to explore students' attitudes regarding the relatively new approach to teaching–learning at this point. Research into student attitudes is essential when assessing whether students consider the use of technology in education as useful, beneficial, and acceptable for their learning (Wong and Fong 2014). Moreover, since students' perception or attitude has an impact on achieving the purpose of learning itself, it would be interesting to explore e-learning and students' attitude towards it.

Problem Statement

Considering the relatively new teaching methodology in the undergraduate nursing programme in the Philippines, changing the delivery of instruction from traditional face-to-face learning to online learning brings about varying perceptions. It was against this background that the study was aimed at determining the attitudes of nursing students towards e-learning.

Purpose of the Study

The purpose of this study was to examine nursing students' attitudes towards e-learning in two selected nursing schools in the Philippines.

Materials and Methods

Research Design

A descriptive, cross-sectional research design was used in this study.

Participants and Setting

The study population included 175 second-year nursing students in two selected nursing schools in the Philippines. One public and one private nursing school were included for comparison purposes. Second-year nursing students were chosen because most nursing schools in the country do not have third- and fourth-year students at present and freshmen were not able to finish their entire first year because of the lockdown in March 2020, hence do not have much experience in nursing school. Using the formula ($n \times 10 + 50$), where n = variables (Van Voorhis and Morgan 2007), the sample size

required was 110 nursing students ($6 \times 10 + 50 = 110$). A total of 111 conveniently selected nursing students responded to the online survey, which was a response rate of 63.43 per cent.

Research Instrument and Data Collection

A two-part questionnaire was used to gather the data. The first part determined the demographic characteristics, computer ownership and competency, internet connection, and usage by the participants. The second part determined the attitude of the participants towards e-learning. In order to measure the participants' attitude towards e-learning, the items were adapted from relevant literature, primarily from the works of Bertea (2009), Akimanimpaye and Fakude (2015), Zabadi and Al-Alawi (2016) and Lee, March, and Peters (2015). The participants rated each item on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree) points. Items 6, 9, 15, and 16 were reversely scored. Higher scores indicate a more positive or better attitude. To interpret the composite attitude, the following scale of mean was used: 1.00–1.79 = very negative attitude, 1.80–2.59 = negative attitude, 2.60–3.39 = ambivalent attitude, 3.40–4.19 = positive attitude, 4.20–5.00 = very positive attitude. The nurse educator evaluated the face validity of the questionnaire. The reliability or internal consistency of the 17-item attitude scale towards e-learning was calculated and turned out to be $\alpha = .906$.

The data were collected through an online survey using Google Forms from 31 May to 28 June 2020, after the community lockdown and unplanned migration of courses to an online platform in March to May 2020 and before the opening of the semester in either August or September 2020. The nursing faculty of each college sent the link of the survey to the Facebook group page of nursing students.

Data Analysis

The IBM Statistical Package for Social Sciences, version 23, was used in this study. The data were quantified and presented using frequencies (f), percentages (%), means (M), and standard deviations (SD) for univariate analysis. In order to test for significant differences, the Mann-Whitney U and Kruskal-Wallis H tests were performed. These tools were used because the study employed convenience sampling and the Shapiro Wilk test indicated that the data were not normality distributed. The alpha level of significance was set at 0.05.

Ethical Consideration

The study was approved by the Research Ethics Board of the San Beda University, with protocol number 2020-015. Upon the conduct of the study, no identifiable information was collected to maintain anonymity and confidentiality. Before the beginning of the survey, the participants were given full disclosure about the study. The participants were reminded that by proceeding to the survey and completing it constitutes consent to participate in the study.

Results

Demographics, Computer Ownership and Competency, Internet Connection, and Usage

A total of 111 second-year nursing students were included in the study. The independent variables of the study that reflect the demographics of the nursing students and other characteristics are given in Table 1. The mean age was 20.17 and the majority (67.6%) were females. Two-thirds (66.7%) of the participants were from public nursing schools and one-third (33.3%) from private nursing schools. The majority (82%) of the participants owned a personal computer and had an intermediate level of computer competency (74.8%). Almost half (48.7%) of the participants used the internet for about 5 to 8 hours daily, and two-thirds (66.7%) had a somewhat stable internet connection.

Table 1: Demographics, computer ownership and competency, internet connection, and usage

Category	f	%
Age (M = 20.17, SD = .58)		
Type of school		
Public	74	66.7
Private	37	33.3
Gender		
Male	36	32.4
Female	75	67.6
Own a personal computer or laptop		
Yes	91	82.0
No	20	18.0
Level of computer competency		
Expert	13	11.7
Intermediate	87	74.8
Beginner	11	9.9
Stability of internet connection		
Very stable	8	7.2
Somewhat stable	75	67.6
Not stable	28	25.2
Usage of internet daily (M = 6.81, SD = 3.35)		
9 or more hours	27	24.3
5–8 hours	54	48.7
1–4	30	27.0

Nursing Students' Attitude towards e-Learning

The participants' attitude towards e-learning is shown in Tables 2 and 3. Generally, the participants had negative (40.5%) and ambivalent attitudes (30.6%) towards e-learning. The composite mean of the attitude towards e-learning was 2.59.

Table 2: Proportion of attitude towards e-learning

Attitude (Composite Mean = 2.59; SD = .71)	f	%
Very positive (4.20–5.00)	4	3.6
Positive (3.40–4.19)	12	10.8
Ambivalent (2.60–3.39)	34	30.6
Negative (1.80–2.59)	45	40.5
Very negative (1.00–1.79)	16	14.4

More than three-fourths of the participants strongly agreed and agreed that the "E-learning seems impersonal and lacks feeling compared to face-to-face classes" (80.18%) and "There is less student–teacher interaction in online learning environments" (75.66%). More than half of the participants strongly agreed and agreed that "E-learning environment needs advanced technical knowledge on computer use" (61.26%) and "E-learning is not an efficient learning method" (53.15%). On the other hand, 53.15% strongly agreed and agreed that "E-learning assures schedule flexibility". Very few participants agreed on the statement that "I think e-learning is better than the traditional or face-to-face method of learning" (6.37%).

Table 3: Proportion of students who strongly agree or agree on attitudinal statements

Statements	f	%	M
1. I am interested in studying courses that use e-learning	41	36.4	3.07
2. I think that e-learning promotes my learning experiences	29	28.5	2.75
3. Presenting courses on the internet makes learning more efficient	22	19.82	2.56
4. I intend to use e-learning tools during the semester if available	59	53.15	3.31
5. I am positive about e-learning	32	28.83	3.00
6. E-learning environment needs advanced technical knowledge of computer use	68	61.26	3.61
7. I would prefer courses on the internet rather than in the classroom or face to face	22	19.92	2.28
8. Online learning is more comfortable and enjoyable to me	18	16.22	2.30
9. E-learning is not an efficient learning method	59	53.15	3.50
10. I prefer e-learning to the face-to-face method	19	17.12	2.32
11. I think e-learning is better than traditional or the face-to-face method of learning	7	6.37	1.81
12. E-learning offers the possibility to efficiently manage your time	41	36.94	3.10
13. E-learning assures schedule flexibility	59	53.15	3.37
14. E-learning reduces students' education expenses	33	29.73	2.69
15. E-learning seems impersonal and lack feeling compared to face-to-face classes	89	80.18	4.00
16. There is less student–teacher interaction in online learning environments	84	75.66	4.08

Statements	f	%	M
17. I am in favour of e-learning	26	23.43	2.61

Differences in the Attitude towards e-Learning

Table 4 shows the statistical analyses and reveals that there were no significant differences in the attitude of the participants towards e-learning based on the type of school ($p = .151$), gender ($p = .085$), ownership of a personal computer or laptop ($p = .333$), level of computer competency ($p = .467$), stability of internet connection ($p = .061$), and usage of internet daily ($p = .227$).

Table 4: Differences in attitude towards e-learning

Items	Mean rank	U/H	*p*
Type of school[a]		1139.500	.151
Public	59.10		
Private	49.80		
Gender[a]		1077.000	.085
Male	48.42		
Female	58.64		
Own a personal computer or laptop[a]		784.000	.333
Yes	57.38		
No	49.70		
Level of computer competency[b]		1.521	.467
Expert	56.42		
Intermediate	57.37		
Beginner	44.68		
Stability of internet connection[b]		5.610	.061
Very stable	63.31		
Somewhat stable	59.83		
Not stable	43.64		
Usage of internet daily[b] (M = 6.77, SD = 3.27)		2.966	.227
9 or more hours	49.47		
5–8 hours	61.27		
1–4	49.47		
Notes: [a] Mann-Whitney U test; [b] Kruskal-Wallis H test; * $p < 0.05$			

Discussion

This study examined the e-learning attitudes of nursing students in times of the COVID-19 pandemic after the unexpected migration of courses to a digital platform and before the opening of the semester in two nursing schools in the Philippines. This study found that the nursing students generally expressed negative and ambivalent attitudes towards e-learning. This is an expected finding during this uncertain and unprecedented time of crisis and as the educational system transition from the traditional delivery of instruction

to a more flexible yet unpopular modality of teaching and learning. The nursing students may be unfamiliar with and not fully prepared for the new modality in learning. The presence of ambivalence indicates both positive and negative reactions or simultaneous conflicting perspectives, reactions, beliefs, or feelings towards an object or event (Oreg and Sverdlik 2011). Theoretically, Lewin's Change Model explains that transition during change is typically accompanied by feelings of hesitation and confusion (Moralista and Oducado 2020; Palma et al. 2020). It makes sense that the reactions to change are also complicated and often contradictory because the change in itself can be overwhelming and multifaceted (Oreg and Sverdlik 2011). Similarly, a study conducted in India during the lockdown period among nursing students reported unfavourable attitudes towards online classes (Gaur et al. 2020).

Indeed, adopting a system without prior preparation leads to poor implementation and can cause frustrations (Ali et al. 2016). Online nursing education and learning present unique challenges when providing nursing students with online authentic learning experiences that relate to nursing situations as they would in the real world (Smith, Passmore, and Faught 2009). Hands-on clinical experience requires the application of classroom theory to a concrete clinical situation (Soriano and Aquino 2017) and is therefore crucial to the learning of nursing students (Oducado, Amboy, et al. 2019). Nursing students and those in allied health sciences may find e-learning less appealing owing to its limitations considering the practical component of the course that is grounded on experiential learning (Abbasi et al. 2020). Although it can be argued that remote teaching provides a safe and alternative way in this time of crisis, it cannot completely replace the practical experience and clinical training component of nursing education.

Furthermore, this study found that students' attitude towards e-learning did not significantly vary according to the study's independent variables. Regardless of the gender, type of school, ownership of computer, level of computer competency, stability connection and internet usage, the nursing students had negative to ambivalent attitudes towards e-learning. Perhaps this is because of the rather similar impact of the crisis on students and relatively new teaching and learning methods. No significant difference was noted in the attitude towards e-learning according to gender in some studies (Thakkar and Joshi 2017). On the contrary, a prior study found that female nursing students are more likely to be satisfied with e-learning (Akimanimpaye and Fakude 2015). Computer competency has a significant influence on nursing students' attitude and satisfaction with e-learning (Akimanimpaye and Fakude 2015; Hvalič-Touzery and Lobe 2015).

This study also demonstrated that nursing students use the internet most of the time. Similar results were obtained in earlier studies in which students commonly use social media very often (Oducado, Sales, et al. 2019). However, despite the extensive usage of the internet among nursing students, this study found that only a few nursing students had a stable internet connection. This is not surprising to note. The Philippines' internet

connectivity lags behind compared to other developing countries in Asia (Salac and Kim 2016). Indian nursing students likewise reported issues related to internet connectivity and speed on their online learning experience during the COVID-19 pandemic (Sood 2020). Student-level barriers such as the lack of computer skills, devices, connectivity, access, and interest had the highest impact on e-learning as shared in a study in Indonesia (Almanthari, Maulina, and Bruce 2020). Although not statistically significant, it is worth mentioning that those students with stable internet connections appear to have a better attitude towards e-learning.

It is argued that e-learning may lead to a widening gap in education (Moralista and Oducado 2020). Students who are deprived of devices, connectivity and technology struggle more to participate in e-learning than privileged students (Biswas and Debnath 2020). The dissatisfaction with e-learning becomes more pronounced for developing countries, limiting economic and technical expertise as compared to developed countries (Ali et al. 2016). Further, developing countries are ill-prepared regarding the adoption of e-learning solutions as one major alternative to traditional teaching and learning, and the emergence of the COVID-19 pandemic has exposed to a large extent the lack of adequate facilities and technology for the implementation of e-learning solutions (Adzovie et al. 2020). It is noteworthy that only a few participants in this study agreed that e-learning reduces students' education expenses. The concerns regarding internet connectivity and other barriers to e-learning should be considered by nursing schools when opting to shift to pure online instruction.

Learning experiences related to real-world nursing situations comprise interpersonal elements (Smith, Passmore, and Faught. 2009). Another noteworthy finding of this study is that nursing students considered e-learning to be impersonal and to have a lack of feeling, and that it results in less student–teacher interaction. A study among Slovenian nursing students supported these findings in which students expressed the lack of interpersonal interaction as a drawback of e-learning (Hvalič-Touzery and Lobe 2015). Along with other barriers, isolation was one of the most frequently reported barriers reported in a systematic review (Regmi and Jones 2020). The physical and temporal separation of teachers and students and among students themselves can lead to feelings of isolation (Croft, Dalton, and Grant 2010). The social presence or the ability to perceive others in an online environment has an impact on students in online courses (Richardson et al. 2017). The finding of this study suggests that the staff of the nursing faculty must be appropriately trained on the dynamics of online learning for them to properly deal with limitations and barriers to online learning. Such training can include promoting interactive lessons and teaching strategies for the online engagement of remote learners.

On a positive note, a little more than half of the participants in this study agreed that e-learning ensured flexibility of schedules. The advantage of e-learning in terms of flexibility is consistent with prior research (Akimanimpaye and Fakude 2015, Ali et al. 2016). In contrast to the traditional classroom learning, e-learning is not constrained by

time and space, allowing for greater flexibility among student nurses (Akimanimpaye and Fakude 2015; Coopasami, Knight, and Pete 2017).

Limitations of the Study

This study was limited to two nursing schools and only one study-year level. Nursing students in other areas of the country or abroad were not included; thus the results cannot be widely generalised. Although the response rate was above 50 per cent, there may be other students with limited connectivity who could not respond to the online survey. Also, because of the research design of the study, establishing a causal relationship between key variables may not be possible. Since the data were collected using a self-report scale, response bias might be present. Moreover, although the attitude scale was validated and had acceptable internal consistency, the scale's robust psychometric properties may be further evaluated. A qualitative component was also lacking that could have explored more deeply the students' experiences and views about e-learning. Considering that perceptions may vary through time, the findings are considered preliminary, and follow-up research is recommended. Other scholars may consider other variables than those included in our study that may cause variations in students' attitudes and further explore factors influencing students' attitude towards e-learning. Nonetheless, the result of this study has provided documented evidence and has added to the limited but growing literature on students' attitudes towards e-learning in the times of the COVID-19 pandemic.

Conclusion

Ambivalent and negative attitudes seem to predominantly dominate nursing students' attitudes towards e-learning in the times of the COVID-19 pandemic, and a stable internet connection remains a problem. Nursing students appear to favour traditional face-to-face teaching rather than online learning. As nursing schools shift to flexible learning schemes or novel educational processes, the learning experiences of students must be carefully planned to ensure that effective teaching and learning are never compromised.

Recommendations

Nursing schools and institutions of learning that take on and adopt e-learning during and beyond the COVID-19 pandemic must be cognisant of the possible challenges to e-learning. They must find ways to mitigate these barriers to seize the transformative opportunities of e-learning. Furthermore, while these barriers remain a challenge, academic nursing institutions must resolve the shortcomings of e-learning, take the necessary measures to improve instruction, be ready to shift online modality, and strive to make learning in the times of the pandemic still yield positive and fruitful learning experiences. Attention should also be paid to continuous assessment of students'

learning experiences and views regarding learning on a digital platform as the educational systems continue to cope in the health crisis.

Acknowledgements

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