Barriers to E-learning during COVID 19 Outbreak as Perceived by Nursing Students at the Faculty of Nursing-Alexandria University

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Abstract:

Background: Online learning is increasingly used to respond to COVID-19 outbreak. Nevertheless, E-learning is still in its early stages of use worldwide, especially in Egypt, where some of the difficulties and challenges of adopting E-learning are still being addressed. Aim of the study: was to identify barriers facing nursing students to e-learning during COVID 19 outbreak. Subjects and methods: Research design: A descriptive research design was used in this study. Setting: The study was conducted at faculty of nursing Alexandria University Egypt. Subjects: 360 undergraduate nursing students for academic year 2020/2021(proportional allocation method) from all levels and all nursing students enrolled in postgraduate programs (n=180). Tools of data collection: Tool: Barriers facing nursing students in online learning. In addition to the socio-demographic characteristics sheet. Results: The study reveals thatmore than half of postgraduate students 55.6% perceived low level of barriers to e-learning.While, 71.7% of undergraduate students perceived a moderate level of barriers to e-learning.Conclusion: The findings of this study concluded that the highest percent of postgraduate students perceived low level of barriers and the highest percentage of undergraduate students perceived moderate level of barriers to e-learning.Recommendations: Introduce training program for increasing awareness of nursing students' to e-learning platform, and   gradual introduction of E-learning courses in nursing education is recommended to reduce barriers to e-learning.

Introduction

COVID-19 has an impact on communities, enterprises, and economies all across the world, as well as higher education institutions. Higher education institutions have seen some changes as a result of the pandemic, with authorities shutting down universitycampuses around the world in an attempt to curb the spread of the virus. Consequently, higher education institutions across the world found themselves in a race to immediately introduce online learning options for staff and students (Jackson et al., 2020).

This sudden change has proven challenging for both students and teaching staff, who have to adjust to a very different approach, moving from an expectation of face-to-face classroom interactions to a requirement to rapidly adapt to online classes from remote locations, combined with a lack of social contact. This situation has forced higher education institutions to change their focus toward effectively delivering online education and assessing outcomes to their students' satisfaction (UNESCO, 2020)

E-learning, defined as a type of distance learning that uses the internet and electronic devices to support remote interaction among students and teachers for learning purposes, can certainly broaden access to education, its implementation and impact have been fraught with challenges and shown to be highly dependent on the presence of certain prerequisites and success factors, particularly in developing countries like Egypt. (Niehues-Jeuffroy, &Rusnak, 2020, Amin&Hussien., 2021). However, e-learning is faced with many obstacles that hinder the smooth implementation of e-learning on a wide base, especially in Egypt, Learners in high education learn through innovation and comprehensive and advanced methods of teaching. Especially in the use of advanced information technology (IT) which created a need for E-learning (AbouShousha ,AbouElEla. 2017) .

Therefore, barriers and challenges that can be faced in using E-learning are still facing such as low-level computer skills, technological anxiety, and computer hardware problems, as well as poor study skills, low motivation, and an inability to work independently(Muilenburg.,&Berge.2005)

In addition, the belief is that learners and instructors lack personal contacts. Moreover, lack of clarification of content materials, and uncertainty on how to measure teaching quality. Researchers reported that students' isolation is a barrier as perceived by the learners. Fostering, e-learning, and its technology demand large investments in terms of faculty, time, money, and space that need to be justifiable to administrators and others in educational leadership. (DABAJ.2011)

These barriers are classified as the following: barriers related to administrators and teaching staff such as organizational change, technical expertise, support and infrastructure, faculty compensation and time, and technology threat and barriers related to learners such ascost and access to the internet, technical problems, time and support for studies, learner motivation, technical skills, academic skills, social interaction (Interactivity), and administrative/instructor issues(Muilenburg., & Berge,.2005).

Faculties, teaching staff and students have been affected by the COVID-19 pandemic and the Egyptian ministry of higher education emphasized the necessity of E-learning implementation in the universities to facilitate the learning process for the learners. However, Egyptian universities face numerous barriers and challenges had no previous experience in digital learning platforms, and are not trained for utilization of this novel teaching strategy (Zaharah, et al 2020). Hence, the present study aims to identify barriers facing nursing students to e-learning. The findings of this study will help to improve nursing education by overcoming these barriers, improving the satisfaction of both nursing teaching staff and

students, and increasing the quality of nursing education in the Faculty of Nursing.

Aims of the study

- identify barriers facing nursing students to e-learningduring the COVID-19 outbreak.

Research Questions:

- What are the barriers facing nursing students to online learningduring the COVID-19 outbreak?

Materials and Method

Materials:

<u>**Research design**</u>:

A descriptive research design was used in this study.

<u>**Settings:**</u>

The study was conducted in the Faculty of Nursing at Alexandria University which grants Bachelor in Nursing Science (BNSc.), Postgraduate Diploma, Master, and Doctorate Degrees in nursing at 9 academic scientific departments.The faculty of Nursing was selected as a higher education organization that has to integrate e-learning to cope with the global requirement as a result of the COVID-19 outbreak.

<u>**Subjects:**</u>

Two study subjectswereincluded: postgraduate students (n=180) and undergraduate nursing students, Proportional allocation method was used based on the Epi info 7 programs to determine the number of undergraduate nursing students that were included in the study (n= 360).

<u>**Tools:**</u>One tool was utilized to develop this research:

Tool (1): Barriers Facing Nursing Students in E-Learning

It was developed by Muilenburg and Berge (2005). It was used by the researcher to identify barriers facing nursing students to e-learning. This section includes 45 items subdivided into 8 categories of barriers namely: Cost and Access to the Internet (3 items), Technical Problems (3 items), Time and Support for Studies (5 items), Learner Motivation (5 items), Technical Skills (6 items), Academic Skills (6 items), Social Interactions (Interactivity)(6items),andAdministrative/Instructor Issues (11 items). Respondents' answers were measured on a 5-point rating scale ranging from 1 = No Barrier to 5 = Very Strong Barrier. A summative score was then calculated to derive the total barriers score (range 45-225). The scoring system: Scores ranged from 45 to 104 are described as low level, scores ranged from 105 to 164 are described as moderate level, and scores ranged from 165 to 225 are described as high level. Demographic and professional data about the subjects included: age, gender, students' level, type of study program, previous formal training on using e-learning, and access to the network in your home.

Method:

- Approval for conducting the study was obtained from the Research Ethics Committee of the Faculty of Nursing, Alexandria University.
- Permission for conducting the study was obtained from the Dean of the Faculty of Nursing, Alexandria University.
- The study tool was tested for content validity by five experts in the field of the study and the necessary modifications were done.
- The study tool was tested for reliability, using Cronbach's alpha test to measure the internal consistency of the items of the tool, and the value scores of the reliability was =0.967
- A pilot study was carried out on 10 % of the study subjects (n=50) categorized as postgraduate students (18), and undergraduate students (32) from the Faculty of Nursing- Damanhour University, who were not included in the study subjects to check and ensure clarity of tools, applicability, feasibility, identify obstacles and problems that may be encountered during data collection and no modifications were required.

- Data collection was completed during the period of 3 months (May to August2021).

-The questionnaire was submitted to the faculty of nursing students both undergraduates and postgraduates through an e- survey on Google form and Microsoft team after getting permission from the head of the academic departments to share the link through social media "What's app groups" to prevent the spread of COVID 19 and hand-delivered survey used to complete data collection because responses on e-survey were limited.

- Data reported by students were summarized, coded,and computerized to identify the e-learning barriers from their perspectives.

- Statistical analysis: Data was coded and transformed into a specially designed form to be suitable for the computer entry process. Data was entered and analyzed by using SPSSversion 25. Descriptive measures included; number, percentage, mean, and stander deviation. The Chi-square test ($\chi2$) was used to baseline data.

Ethical considerations:

• Written informed consent from the study subjects was obtained after explaining the aim of the study.

• Confidentiality of data was assured.

• Privacy of the study subjects was maintained.

• The subjects' voluntary participation and their right to withdraw from the study at any time were emphasized.

Statistical analysis:

The collected data was revised, categorized, coded, computerized, tabulated and analyzed using Statistical Package for Social Sciences (SPSS) version 25.0. Reliability of the tool was determined by Cronbach's alpha and presented in descriptive, and association forms.

Results:

Table(1)Distribution of the faculty of nursing studied postgraduate and undergraduate students according to their demographic and professional characteristics Illustrates that the mean score of postgraduate students' age was 30.33 ± 6.944. The highest percentage of postgraduate students age (56.1%) ranged from 25 to less than 35 years old, while the mean score of undergraduate students age was 20.96+_ 1.89, and the highest percentage of undergraduate students age (38.6%) ranged from 22 to less than 24 years old.

Concerning the gender of postgraduate students, 80.6% of them were female. While 62.8% of undergraduate students were female. Also, the highest percentage of postgraduate students (51.1%) were enrolled in a doctorate program, while more than one-third of undergraduate students (34.7%) were enrolled in the first level.

The same table showed that more than one-half of both postgraduate students (57.2%) and undergraduate students (58.1%) attended e-learning training. The majority (93.3%) of postgraduate students have a smartphone and the majority of them (95.6%) have access to the internet at home. All undergraduate students have a smartphone and 85.8% of them have access to the internet at home. While 14.2% of them have no access to the internet at home.

Table (2)Distribution of the levels of perceived barriers to e-learning as perceived by postgraduate and undergraduate studentsshows that slightly more thanhalf of postgraduate students (55.6%) showeda low level of overall barriers to e- learning. In particular, the highest percentage was devoted to the barriers of "academic skills, followed by administrator and instructor issues, and learnermotivation"as perceived by postgraduate students (55.6%, 53.9%, 48.3%) respectively. Whereas, 71.7% showed a moderate level of overall barriers to e-learning. The same table reveals that the highest percentage among undergraduate students were related to the barriers "administrator and instructor issues followed

by learner motivation, and academic skills" (61.4%, 51.7%, 51.1%) successively.

Table (3)Relationship between the studied postgraduate students' demographic and professional characteristics and their perceived levels of barriers to e-learning illustrates that there was a statistical significant difference between postgraduate students' age and their level of perceived barriers to e-learning as well as between access to the internet at home and level of perceived barriers to e-learning, where p = (0.050*, 0.000*) respectively. Concerning postgraduate students' age, all postgraduate students age ranged from 45 and more years old perceived low barriers to e-learning.

Where those in age ranged from25 to less than 35 years old perceived high level of barriers to e-learning (7.9%). In relation to, access to the internet at home the highest percentage of those who have access to the internet at home (58.1%) perceived low level of barriers to e-learning. While the lowest percentage of them (5.2%) perceived high level of barriers to e-learning. On the other hand, the highest percentage of those have no access to the internet at home perceived moderate and high level of barriers to e-learning (50.0% & 50.0%) respectively. While the lowest percentage of them (0.0%) perceived low level of barriers to e-learning.

Table (4)Relationship between the studied undergraduate students' demographic and professional characteristics and their perceived levels of barriers to e-learning:illustrates that there were statistical significant differences among undergraduate students' perceived levels of barriers to e-learning in relation to their demographic and professional characteristics in the term of age , type of study program and access to internet at home where p = (0.000*, 0.000*, 0.002*) respectively. Concerning age, all undergraduate studentsthose theirage ranged from 18 to less than 20 years old perceived moderate level of barriers to e-learning. As related to, type of study program the highest

percentage of students in first, second, fourth and third level had moderate level of perception of barriers to e-learning (95.2%, 64.6%, 58.2% & 52.7%) respectively. On the other hand, the lowest percentage of students in first level (1.6%) perceived high level of barriers to e-learning. Concerning access to the internet at home, the highest percentage of students who have no access and those who have access to the internet at home perceived moderate level of barriers to e-learning (92.2% & 68.3%) respectively.

Discussion

The worldwide Covid-19 pandemic has visualized the potential importance of e-learning across all dimensions of the nursing profession. Therefore, the Egyptian Ministry of Higher Education and Scientific Research monitored such impact and directed efforts to adopt E-learning to facilitate the learning process for the students, thus in the same context current research work was conducted as a forward step to build up a valuable strategic plan to improve the overall efficiency of a nursing integrated e-learning system to match current challenges based on the quality of nursing education guidelines (Amin&Hussien., 2021).

Regarding the distribution of the studied postgraduate and undergraduate students according to their level of perceived barriers to e-learning, the current finding showed that slightly more than one-half of postgraduate students had a low level of overall perceived barriers to e-learning, Whereas, 71.7% of undergraduate students had a moderate level of overall perceived barriers to e-learning. This could be due to a Lack of sufficient computer labs in the faculty, a lack of social context cues (such as body language and facial expressions), a lack of interaction and communication among students in online courses, a lack of technical assistance, and not have the skills necessary to successfully navigate through the online course.

In the same context with the current findings, Alkinani (2021) found that the respondents informed that they were contributed by the lecturer's delayed feedback, lack of technical support by lecturers, low in self-esteem and self-

motivation, feel isolated, one-way of educational methods, and poorly-designed class materials.

In agreement with the current study, Warshawski and colleagues stated that first-year students experienced increased workloads, difficulty managing and understanding study materials, and a lack of learning interaction. Consequently, perceptions of difficulty decreased their academic self-efficacy, which is recognized as an important motivator for academic success (Warshawski, 2022).

Concerning the relationship between the studied postgraduates and undergraduate students' demographic and professional characteristics and their levels of perceived barriers to e-learning, the current findings illustrated that there was a statistically significant difference among postgraduate students' level of perceived barriers to e-learning in relation to their age and access to the internet at home. Also, there was a statistically significant difference among undergraduate students' levels of perceived barriers to e-learning in relation to their age, type of study program, and access to the internet at home. This might be due to access to the internet at home one of the most challenges facing post and undergraduates students to perceive E-learning without the need to go internet center out of the home which consumes time, more cost, and effort on the students, and students now are interested in computers, technology, and the internet in addition to social media. So, use the new e-learning platforms and they are self-learners but the students felt isolated in e-learning.

The current study findings are similar to Mirko et al., (2022) revealed that students' plus both administrative and teaching staff engagement in the educational process provide effective ways to achieve learning outcomes.

Conclusion

The findings of this study concluded that themajority of postgraduate students perceived low level of barriers and the highest percentage of undergraduate students perceived moderate level of barriers to e-learning.

Recommendations:

Based on the findings of the present study the following are recommended:

- Conduct continuous training programs for teaching staff and students regarding e-learning platforms and how to use it effectively.
- Training workshops for the instructors to enable them to solve the student's technical problems.
- The dean of the Faculty of Nursing should support the cost of the internet for the students.
- Provide adequate computer labs to students at the faculty.
- Further research is required to study learning barriers in other educational institutions and to understand how it affects students.

Table (1): Distribution ofthe faculty of nursing studied postgraduate and undergraduate students according to their demographic and professional characteristics

Student demographic and professional characteristics	Postgraduate students' N=180		Undergraduate students' N=360	
	No.	%	No.	%
Age (years)				
▪ 25-	101	56.1		
▪ 35-	66	36.7		
▪ ≥45	13	7.2		
▪ 18-			120	33.3
▪ 20-			72	20.0
▪ 22-			139	38.6
▪ ≥24			29	8.1
▪ Min- Max	25.0-52.0		18.0-27.0	
▪ Mean ± SD	30.33 ± 6.944		20.96 ± 1.908	
Gender				
▪ Male	35	19.4	134	37.2
▪ Female	145	80.6	226	62.8
Type of study program				
▪ First	0	0.0	125	34.7
▪ Second	0	0.0	82	22.8
▪ Third	0	0.0	55	15.3
▪ Fourth	0	0.0	98	27.2
▪ Master	88	48.9	0	0.0
▪ Doctorate	92	51.1	0	0.0
Attended training on e-learning				
▪ Yes	103	57.2	209	58.1
▪ No	77	42.8	151	41.9
Have a smartphone				
▪ Yes	168	93.3	360	100.0
▪ No	12	6.7	0	0.0
Access to internet at home				
▪ Yes	172	95.6	309	85.8
▪ No	8	4.4	51	14.2

Table (2): Distribution of the levelsof perceived barriers to e-learning as perceived by postgraduateand undergraduate students

Barriers to e-learning dimensions	Postgraduate students n=180						Undergraduate students n=360					
	Levels of Barriers to e- Learning						Levels of Barriers to e- Learning					
	Low		Moderate		High		Low		Moderate		High	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
- Time & support for study	66	36.7	93	51.7	21	11.7	114	31.7	157	43.6	89	24.7
- Cost & access to internet	58	32.2	89	49.4	33	18.3	141	39.2	164	45.6	55	15.3
- Technical problems	80	44.4	83	46.1	17	9.4	105	29.2	143	39.7	112	31.1
- Learner motivation	87	48.3	85	47.2	8	4.4	102	28.3	186	51.7	72	20.0
- Social interaction	82	45.6	64	35.6	34	18.9	61	16.9	164	45.6	135	37.5
- Administrator & instructor issues	97	53.9	74	41.1	9	5.0	50	13.9	221	61.4	89	24.7
- Technical skills	87	48.3	80	44.4	13	7.2	100	27.8	170	47.2	90	25.0
- Academic skills	100	55.6	67	37.2	13	7.2	126	35.0	184	51.1	50	13.9
Overall Barriers to e- Learning	**100**	**55.6**	**67**	**37.2**	**13**	**7.2**	**52**	**14.4**	**258**	**71.7**	**50**	**13.9**

Low level45-104Moderate level 105-164High level 165-225

Table (3): Relationship between the studied postgraduate students' demographic and professional characteristics and their perceived levels of barriers to e-learning

Students' demographic and professional characteristics	Levels of Barriers toe- Learning						Total N=180		Test of Significance
	Low (45-104)		Moderate (105-164)		High (165-225)				
	No.	%	No.	%	No.	%	No.	%	
Age (years)									
▪ 25-	56	55.4	37	36.6	8	7.9	101	56.1	X^2=12.567
▪ 35-	31	47.0	30	45.5	5	7.6	66	36.7	P=0.050*
▪ ≥45	13	100	0	0.0	0	0.0	13	7.2	
Gender									
▪ Male	22	62.9	13	37.1	0	0.0	35	19.4	X^2=3.555
▪ Female	78	53.8	54	37.2	13	9.0	145	80.6	P=0.169
Type of study program									
▪ Master	56	63.6	28	31.8	4	4.5	88	48.9	X^2= 5.083
▪ Doctorate	44	47.8	39	42.4	9	9.8	92	51.1	P=0.079
Attended training on e-learning									
▪ Yes	60	58.3	38	36.9	5	4.9	103	57.2	X^2=2.191
▪ No	40	51.9	29	37.7	8	10.4	77	42.8	P=0.334
Have smartphone									
▪ Yes	92	54.8	63	37.5	13	7.7	168	93.3	X^2=1.267
▪ No	8	66.7	4	33.3	0	0.0	12	6.7	P= 0.531
Access to internet at home									
▪ Yes	100	58.1	63	36.6	9	5.2	172	95.6	X^2=26.231
▪ No	0	0.0	4	50.0	4	50.0	8	4.4	P=0.000*

Table (4): Relationship between the studied undergraduate students' demographic and professional characteristics and their perceived levels of barriers to e-learning:

Students' demographic & professional characteristics	Levels of Barriers toe-Learning						Total N=360		Test of Significance
	Low (45-104)		Moderate (105-164)		High (165-225)				
	No.	%	No.	%	No.	%	No.	%	
Age (years)									
▪ 18-	0	0.0	120	100.0	0	0.0	120	33.3	X²=93.414
▪ 20-	13	18.1	47	65.3	12	16.7	72	20.0	P=0.000*
▪ 22-	31	22.3	83	59.7	25	18.0	139	38.6	
▪ ≥24	8	27.6	8	27.6	13	44.8	29	8.1	
Gender									
▪ Male	17	12.7	98	73.1	19	14.2	134	37.2	X²=0.534
▪ Female	35	15.5	160	70.8	31	13.7	226	62.8	P=0.766
Type of study program									
▪ First	4	3.2	119	95.2	2	1.6	125	34.7	X²= 57.855
▪ Second	16	19.5	53	64.6	13	15.9	82	22.8	P=0.000*
▪ Third	10	18.2	29	52.7	16	29.1	55	15.3	
▪ Fourth	22	22.4	57	58.2	19	19.4	98	27.2	
Attended training on e-learning									
▪ Yes	27	12.9	152	72.7	30	14.4	209	58.1	X²=0.959
▪ No	25	16.6	106	70.2	20	13.2	151	41.9	P=0.619
Have smartphone									
▪ Yes	52	14.4	258	71.7	50	13.9	360	100.0	X²=NA
▪ No	0	0.0	0	0.0	0	0.0	0	0.0	
Access to internet at home									
▪ Yes	50	16.2	211	68.3	48	15.5	309	85.8	X²=12.286
▪ No	2	3.9	47	92.2	2	3.9	51	14.2	P=0.002*

X² Chi Square Test* Statistically significant at p ≤ 0.05

References

AbouShousha, A., AbouElEla, L. (2017). Preparedness, and barriers of nursing students to E-learning in Damanhour University. *Zagazig Nursing Journal 13*(1), 3-17.

Alkinani,E. (2021).Saudi Arabian Undergraduate Students' Perceptionsof E-Learning Quality During COVID-19 Pandemic. *International Journal of Computer Science and Network Security* 21(2), 66-76.

Amin.S., Hussien.N. (2021).Perception of University Students toward the Effectiveness of E- Learning during Covid-19 Pandemic.*Egyptian Journal of Health Care Journal*, 12(4), 187-200.

DABAJ F. (2011).Analysis of Communication Barriers to Distance Education.*Online Journal of Communication and Media Technologies Journal* 1(1), 1-15.

Jackson, D., Bradbury-Jones, C., Baptiste, D., Gelling, L., Morin, K. H., Neville, S., & Smith, G. D. (2020).Editorial. Life in the pandemic: Some reflections on nursing in the context of COVID-19. *Journal of Clinical Nursing*, 1– 3.

Mirko P., Igor K, Sabina L. Evaluation of E-Learning Experience among Health and Allied Health Professions Students during the COVID-19 Pandemic in Slovenia: An Instrument Development and Validation Study. Int. J. Environ. Res. Public Health.2022; 19: 4777. https://doi.org/10.3390/ijerph19084777

Muilenburg, L. Y., & Berge, Z. L. (2005). Student barriers to online learning: A factor analytic study. *Distance education*, *26*(1), 29-48.

Niehues-Jeuffroy, H., &Rusnak, O. (2020, June). Can e-Learning be a Solution for Egyptian Higher Education in the Times of COVID-19? A Look at Technological Capacities and Digital Skills. In *EDEN Conference Proceedings,1*, 321-334.

UNESCO (2020).COVID-19 educational disruption and response.https://en.unesco.org/news/covid-19-educational-disruption-and-response. Accessed 17 May 2022.

Warshawski S.(2022) . Academic Self-Efficacy, Resilience and Social Support among First-Year Israeli Nursing Students Learning in Online Environments during COVID-19 Pandemic. *Nurse Education Today* Journal, 110, 105267

Zaharah, Z., Kirilova, G., and Windarti, A. (2020). Impact of Corona Virus Outbreak Towards Teaching and Learning Activities in Indonesia. SALAM: *Journal SosialdanBudayaSyar-i,* 7 (3): 269- 281. https:// doi.org/ 10. 15408/ sjsbs. v7i3.15104