

Effect of COVID-19 Pandemic on the Competencies of Academic Staff of Nursing Faculties Regarding their Use of Online Applications in Teaching / Learning Tasks

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Abstract:

As a response to COVID-19 pandemic, a growing number of universities across the world have either postponed or canceled all its activities and use distance learning to mitigate loss of learning. **The aim of the study** was to determine the effect of COVID-19 pandemic on the competencies of academic staff of nursing faculties regarding the use of online applications in teaching and learning tasks. **Study design:** Web-based descriptive study design. **Settings:** Six faculties of nursing affiliated to six Egyptian governmental Universities were chosen randomly. **Subjects:** A convenience sample of 457 nursing academic staff working at the previous mentioned settings. **Study tool:** A structured web-based questionnaire schedule that consisted of three parts. part I: Nursing academic staff' personal data. Part II: Past experience of academic staff regarding their use of online applications for teaching and learning. Part III: Competencies of the academic nursing staff regarding their use of online applications for teaching and learning. **Results:** before COVID-19 pandemic, only less than two fifths of the studied subjects used the online applications for teaching/learning process. After the pandemic, more than half of them attended committees, workshops or councils via online applications. More than half of the studied staff had low level of competencies in using online applications, and all staff reported their need for more training. **Conclusion & recommendations:** the highest percentage of academic nursing staff had low competency in dealing with online applications for teaching or learning. So, it was recommended that, universities must ensure supporting instructors in transitioning to online teaching via professional development or training.

Key words: Covid-19, Nursing education, Online applications, Teaching, Learning, Faculty staff, Competencies.

Introduction:

The novel coronavirus disease 2019 (COVID-19) emerged at the end of December 2019 in Wuhan city of China. Within a few weeks, cases of COVID-19 were detected in several other countries and soon, it became a global threat resulting in more than 33,997 deaths and the World Health Organization (WHO) declared it as a pandemic^(1,2). The COVID-19 pandemic is the defining global health crisis of our time and the greatest challenge we have faced since world war two. This pandemic is much more than a health crisis as it is stressing every one of the countries. It has the potential to create devastating social, economic, political and educational effects that will leave deep and longstanding scars⁽³⁻⁵⁾.

In a respond to COVID-19, Public health experts and government officials in many countries are taking several measures, including social distancing, self- isolation, or quarantine; strengthening health facilities to control the disease; and asking people to work at home⁽¹⁾. Efforts to reduce the spread of the COVID-19 virus among the younger and adult populations has prompted the widespread closure of schools, colleges, universities, and other educational institutions in many countries⁽¹⁾. Most governments around the world have temporarily closed educational

institutions in an attempt to contain the spread of Covid-19 pandemic. These nationwide closures are impacting over 91% of world's student population (UNESCO 2020). In March 2020, 150 countries have closed schools and educational institutions nationwide, impacting over 80% of the world's student population^(1,2).

Coronavirus pandemic has triggered the significant change, imposing many challenges in the higher education community globally^(1,6). Since its foundation, universities, face devastating epidemics that have impacted their daily functioning. Universities have to survive and continue their mission even with their doors closed^(2,7). In light of rising concern about the current COVID-19 pandemic, a growing number of universities across the world have either postponed or canceled all activities and moved rapidly to transition various courses and programs from face-to-face to online delivery mode⁽⁷⁾. In Egypt and many other countries, schools and universities are deploying a mix of innovative and renewed approaches to ensure the right to education⁽⁸⁾. The Egyptian Supreme Council of Universities announced that all students will continue their study via distance learning until the end of April (2020). However, the council has cancelled the second semester's oral

and written exams for all students, excluding final year students ⁽⁹⁾.

The urgent and unexpected request for previously face-to-face university courses to be taught online is a particular challenge that face the university community ⁽⁶⁾.The rapid closing-off of face-to face educational work, in response to the Covid-19 pandemic, gave teachers a strong sense of the difference between online teaching and their other modes of operation ^(2,6,10).

Online teaching is not a new mode of delivery for any university. Many faculty members get training to use online learning platforms either as the only delivery mode or as an add-on to face-to-face teaching ⁽¹¹⁾. It involves a variety of tools, resources, pedagogical approaches, roles, organizational arrangements and forms of interaction, monitoring and support ⁽⁶⁾.

The transition to online mode has raised questions for the faculty about their capability and competency to deal with the existing technology ⁽¹²⁾. Nursing faculty need to keep up with ever-evolving technological practices to enhance teaching and meet the learning needs of a diverse student population. Faculty academic members need training to work within the changing healthcare environment, which is increasingly dependent on technology ⁽¹³⁾.

Amidst the nationwide lockdown, universities are depending on a huge list of educational applications, platforms websites, social networks or learning management systems (LMS) aim to help teachers and administrators facilitate student learning such as a medium for delivering material, assessment, or just to collect duty. It provides social care and interaction during periods of closure. Most of these applications are free and many cater to multiple languages. They are categorized based on distance learning needs, but most of them offer functionalities across multiple categories⁽⁵⁾. According to some experts, the use of LMS is effective for managing learning because has features that are very complete and easy to access ^(5,14). Edmodo and Moodle are examples of tools and resources used to manage classrooms and engage students remotely. They are community-driven and globally supported open learning platform. It can be used to share learning resources, give assignments, and do assessments. Other collaboration platforms that support live-video communication include Microsoft teams, WebEx, zoom, Skype and WhatsApp ^(5, 14-17).

There is a sudden surge seen in the number of webinars and online learning sessions

on social media platforms, on various topics of optometry, attended not only by students but also by a massive number of practitioners⁽¹⁾. This has generated never before momentum in optometry education and also in continuing education programs⁽¹⁾. A strong theme identified within the literature that is specific to nursing education centers on the role of academic teaching staff in the online curriculum and the capacity to maintain control over the evaluation of clinical competencies⁽¹⁸⁾. Teaching with technology involves the decisions of nurse educators about when and how to use those tools based on the outcomes to be achieved, not because a technology is new and exciting. The main consideration in selecting a technology tool is whether it will facilitate learning and is consistent with the goals of the course⁽¹⁹⁾.

The urgent imperative to ‘move online’, caused by the recent Covid-19 pandemic has added to the stresses and workloads experienced by university faculty and staff who were already struggling to balance teaching, research and service obligations, not to mention the work-life balance. Teaching staff of all backgrounds and ages have had to prepare and deliver their classes from home, with all the practical and technical challenges this entails, and often without proper technical support⁽⁶⁾.

It is not realistic to expect all nurse educators to seek out and adopt new technologies and teaching innovations. A significant challenge for university teachers has been their lack of the pedagogical content knowledge (PCK) needed for teaching online which includes technical and administrative aspects of teaching online (e.g. using platforms and tools and organizing workflows)⁽⁶⁾. Every faculty needs a few creative nurse educators who take the lead and are early adopters. They can serve as role models for the rest of the faculty. All nurse educators, however, can use teaching methods that engage learners and encourage them to create their own learning rather than consume content from the teacher⁽¹⁹⁾.

Significance of study:

Faculty members are the critical gatekeepers who help students’ master critical thinking⁽¹³⁾. A significant percentage of academic staff have gaps in their knowledge and familiarity with online teaching practices while some are doubt concerned about being able to achieve their intended learning outcomes, they are also excited about the technical barriers they have overcome and all that they have learned, all of that make huge challenge⁽²⁰⁾. The extent of faculty members’ knowledge, perception and competency regarding technology

integration into the nursing curriculum is very limited. The present study focuses on the competencies of nursing academic staff of Egyptian universities in using online teaching and learning after COVID-19 pandemic.

Aim of the study:

The aim of this study was to determine the effect of COVID-19 pandemic on the competencies of academic staff of nursing faculties regarding the use of online applications in teaching learning / tasks.

Research question:

Could COVID-19 pandemic force positive change in the competencies of academic staff of nursing faculties regarding the use of online applications in teaching learning tasks?

Subjects and method:

Study design:

Descriptive study design was utilized to conduct the current study.

Settings:

This study was conducted at six Faculties of Nursing affiliated to six Egyptian Governmental Universities out of 22 Universities (Tanta University, Damanhur University, El-Mansoura University, El-Fayoum University, El-Menoufiya University and Kafer Elsheikh University) These universities were selected randomly using simple random technique to represent nearly about one quarter of the

Egyptian universities which include faculty of nursing among its faculties.

Subjects:

A convenience sample of 457 nursing academic staff (449 females and 8 males) working at the previous mentioned settings during the academic year 2019/ 2020 and who were willing to participate in this study via internet were included in the study.

The sample size was calculated using Epi-Info software statistical package, created by World Health Organization and Center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002 ⁽²¹⁾. The sample size was found at $N > 400$.

Tool of the study:

A structured web-based questionnaire schedule that was developed and used by the researchers to collect the necessary data. It comprised of the following parts:

Part (1): Personal characteristics of the studied staff: This part included data of sex, academic position, and years of teaching experience.

Part (2): Post-experience of academic staff regarding their use of online applications in teaching and learning

It included the academic nursing staff awareness of the online applications that could be used in distance education, previous use of them before COVID 19 pandemic and the obstacles faced them

during their use. Moreover, this part included the experience of the academic nursing staff regarding attending virtually workshops or conferences, its benefit compared to face to face attendance, and the source of technical support to them.

Part (3): Competencies of the academic nursing staff regarding their use of online applications for teaching and learning task:

This part was developed by the researchers guided by Educational Technology Standards Scale (ETSS) ⁽²²⁾ to assess the academic nursing staff competencies regarding the use of online applications teaching and learning tasks. This part composed of 19 statements that covered the following four domains: Technology operations and concepts domain (6 statements), assessment and evaluation domain (3 statements), productivity and professional practice domain (6 statements), and ethical and legal domain (2 statements) in addition to (2 statements) that assess the degree of the academic staff needs for more training to promote their competencies of online teaching and learning.

The academic nursing staff' responses were measured using four points Likert Scale ranging from (one) denotes not at all, (two) little degree, (three) moderate degree and (four) greatly.

Scoring system: -

The total score of this part ranged from 19 to 76 where a higher score expresses higher competency level and the total score was classified as follows:

-Low technological competencies: < 50 % of the total score (< 38).

-Moderate technological competencies 50 % to < 80 % of total score (38 - 59).

-High technological competencies > 80% of the total score (60-76).

Method:

1. An official permission letter to carry out the study was obtained from Dean of the Faculty of Nursing Tanta University to deans of the randomly selected Nursing Faculties. This letter was accompanied with the Web- based link of the questionnaire.

2. Ethical considerations:

-A tacit approval of the studied subjects was obtained though their acceptance to fill the questionnaire after appropriate explanation of the nature and purpose of the study.

- Anonymity and confidentiality of the collected data.

- Nature of the study was not cause harm and/or pain to the entire sample.

3. Developing the tool: -

-Tool of the study developed by the researchers based on relevant literature.

The tool was tested for its face and content validity by five experts in the related fields and the necessary modifications were done.

- Then the questionnaire was designed electronically by using of Google Drives Forms.

4. The reliability of the tool was tested using the Cronbach's alpha test. It was 0.770, for the total questionnaire, 0.695 for the subjects' experience of using online application and 0.916 for Competency part. The reliability of the questionnaire has been shown to be good

5. A pilot study was carried out on a sample of 45 academic faculty staff that represents 10 % of the sample size to ascertain the clarity and applicability of the study tool. In addition, it served to identify any obstacles that might be faced during data collection. Those subjects were not excluded later from the study sample as there were no modifications done.

6. The actual study:

- Collection of data for the present study was done during the period from first of July to the end of August 2020.
- Nursing academic staff voluntarily completed the anonymous, self-administered, Web-based questionnaire via WhatsApp application.

7. Statistical analysis:

The data were coded, entered and analyzed using SPSS (version 20). Descriptive statistics (frequency numbers and percentages) identified personal characteristics and academic staff responses to the questionnaire. Pearson's correlation was used to examine the correlations between studied subjects' personal data and their competency level in using online application. Statistically significant was set at P value $P < 0.01$

Results:

Table (1): Shows the distribution of the studied nursing academic staff according to their personal data. The table illustrates that, most (98.2%) of the studied subjects were females. As regard to the years of teaching experience, more than one third (37.2%) of the studied nursing academic staff had teaching experience less than five years. Nearly about one fifth (20.8%) of them had 5 - <10 years of experience and less than one quarter (23%) of them had experience years ranged between 10 to 15 years. The years of experience of the studied academic staff ranged between 1-38 years and the mean of their experience years was 9.65 ± 7.83 . Additionally, the table shows that, more than one third (36.8%) of the studied subjects were

clinical demonstrators and about one quarter (24.1%) of them were assistant lecturers while, nearly about one fifth (21.9 %) of them were lecturers.

Table (2): Presents the distribution of the studied nursing academic staff according to their awareness of types of new online applications used in teaching / learning tasks. The table shows that, the highest frequencies of the studied nursing academic staff (61.7 %) were aware of Zoom as an online application used for distant teaching and learning. Less than one fifth (15.8% and 14%) of them mentioned that WebEx and Microsoft teams are among the online applications for distance education respectively. On the other hand, less than one fifth (14.7% and 13.1 %) of the studied subjects reported that, WhatsApp and Telegram as online applications for distant teaching and learning respectively. Only little percent of the studied nursing academic staff (7.2 %) were aware that Edmodo is one of the online applications used for distant teaching and learning.

Figure (1): Illustrates the distribution of the studied nursing academic staff according to their previous use of online applications before covid-19. It was obvious that, more than one third (38.5 %) of the studied nursing academic staff were previously use the online applications in

teaching and learning before covid-19 pandemic. While, less than two thirds (61.5%) of them mentioned that they didn't use these applications previously.

Table (3): Shows the distribution of the studied nursing academic staff according to their experience of using online applications before covid-19. The table shows that, more than two fifths (40.9 % and 43.2 %) out of the studied nursing academic staff who reported that they used the technological programs before covid-19 pandemic was using Telegram and WhatsApp programs for teaching / learning activities respectively. Concerning to Zoom, WebEx, Microsoft teams and Edmodo, only very little percentage (2.8 %, 1.2%, 1.7% and 2.8%) of them mentioned that they used these programs in teaching and learning before covid-19 pandemic respectively. Less than one fifth (15.4%) of them used Moodle program for the activation of an Electronic course.

As for the field of using these programs, three quarters (75%) out of the studied subjects who used these online applications before the pandemic reported that, they used them to communicate with their students and more than one third (36.3%) of them used them for thesis accomplishment. Regarding the obstacles that the studied subjects faced while using these applications, more than half (52.3%)

of them mentioned that, inadequate time was the main obstacles faced them. While, less than one quarter (22.7%)

Table (4): Presents the distribution of the studied nursing academic staff according to their technological experience after covid-19. The table reveals that, after Covid-19 pandemic more than half (56%) of the studied nursing academic staff used online applications either in attending committees, workshops or councils. More than one quarter (25.6% and 29.8%) of them attended online conferences or workshop inside Egypt respectively. Meanwhile, 9 % of the studied academic staff attended an online workshop outside Egypt.

As regard to the source of technical support to use the online applications, most (97.9%) of the studied nursing academic staff had their technical support from videos of the workshop managers, while about two fifth (39.2% and 39.4%) of them had the technical support from the videos of MIS and IT Units in their faculties respectively. However, about one third (31.7%) of the studied nursing academic staff had their technical support from YouTube videos.

Figure (2): Shows the distribution of the studied nursing academic staff according to their reported benefits of the use of online applications in teaching and

learning compared to the traditional attendance. This figure revealed that, less than one half (44.4%) of the studied nursing academic staff got fewer benefits from the use of online applications compared to the traditional attendance.

On the other hand, about one quarter (24.5%) and less than one third (31.1%) of them reported that, they had got great or equal benefits of using online technical programs for teaching and learning respectively compared to the traditional attendance.

Figure (3): Shows distribution of the studied nursing academic staff according to knowledge about importance of using online applications after covid-19 pandemic. This figure shows that, most (93.7% and 98.7%) of the studied nursing academic staff reported that, the use of the online applications needs less effort and less cost respectively. While the majority (86.2% and 83.6%) of them mentioned that, it decreases the opportunities of infection and need less time respectively.

Table (5): Shows the distribution of the studied nursing academic staff according to their competencies of using online applications after Covid-19 pandemic. As regard to the process and concept domain of competency, more than half (57.8%, 60.2% and 50.8%) of the studied nursing academic staff can greatly use some online

applications to explain theoretical nursing lesson, record voice on power point presentation and prepare and upload an educational videos for students respectively. Meanwhile, more than two fifths (41.6%, 44.9% and 40.5%) of them can moderately use some online applications to explain practical nursing lesson, chose the appropriate technological educational applications through evaluation of the current applications and plan for teaching process in the line of new educational technology respectively.

Concerning to assessment and evaluation domain, less than half (44.4%.46.2 % and 47.9%) of the studied nursing academic staff reported that, they can use technological distance education applications to evaluate students' knowledge & understanding skills, evaluate the students' practical skills, and use technology to develop appropriate strategies to solve teaching and learning problems respectively.

As for the productivity domain of competency, more than half (51.6%) of the studied nursing academic staff could greatly attend workshops through online applications for distance education. About two fifths (42.5%, 39.4% and 40.9%) of them can moderately conduct workshops through distance education programs, evaluate and judge a Master / PhD thesis,

or connected with supervisors through online applications respectively. On the other hand, more than one fifth (22.4% and 30.6%) of the studied subjects either can't share ideas with the experts and colleagues through internet to develop their educational skills or can share it with little degree.

Furthermore, this table shows that, the highest frequencies (41.6 % and 60.6%) of the studied nursing academic staff moderately know the legal and ethical issues of the use of technological educational online applications in teaching and learning respectively. While less than half (40.7% and 46.6%) of them reported that they need for developing their skills of using technology on teaching and learning either moderately or greatly respectively.

Figure (4): Shows distribution of the studied nursing academic staff according to the reported level of total competencies score. It was clear that, more than half of studied academic staff had low competency level regarding use of the online applications for teaching/learning activities, while the rest (46.6%) of them had moderate level of competency.

Table (6): Presents the distribution of the studied nursing academic staff according to their perception of the importance of online applications for teaching and learning. More than one third (38.3%) of

the studied subjects reported that, online applications help the staff to be facilitators rather than information givers. One third (33.3%) of them mentioned that it decreases tension of lecture preparation, while less than one third (30.9%) of the mentioned that it increases staff competencies.

Table (7): Shows the correlation between the academic nursing staff personal data and their competencies in using online applications for teaching and learning. The table reveals that, there were strong significant positive correlations between the academic degree and teaching experience of the studied subjects and their competencies in using online applications for teaching and learning ($p = <0.001$ and <0.001) respectively. This means that the increase in the teaching experience and the higher academic degree are associated with higher level of competency in using the online technological program among the academic nursing staff.

Table (1): Distribution of the studied nursing academic staff according to their personal data

Personal data	Studied nursing academic staff (n=457)	
	NO	%
Sex:		
• Females	449	98.2
• Male	8	1.8
Years of teaching experience:		
• Less than 5 years	170	37.2
• 5 - <10 Years	95	20.8
• 10-15 Years	105	23
• > 15 years	87	19
Rang	1-38	
Mean±SD	9.65±7.83	
Academic degree		
• Clinical demonstrator	168	36.8
• Assistant lecturer	110	24.1
• Lecturer	100	21.9
• Assistant professor	61	13.3
• Professor	18	3.9

Table (2): Distribution of the studied nursing academic staff according to their awareness of types of new online applications used in teaching / learning tasks

# Online applications	Studied nursing academic staff (n=457)	
	NO	%
Zoom	282	61.7
WebEx	72	15.8
Microsoft teams	64	14
Edmodo	33	7.2
Telegram	60	13.1
WhatsApp	67	14.7

More than one answer

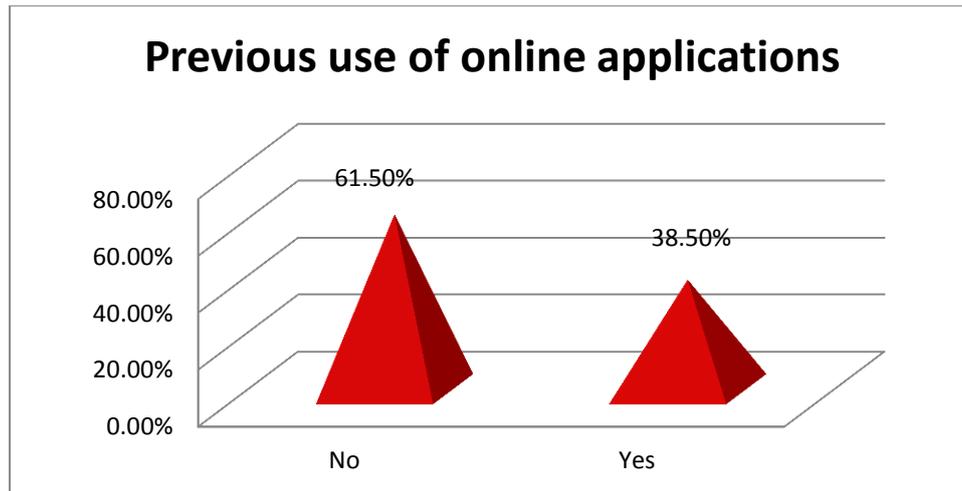


Figure (1): Distribution of the studied nursing academic staff according to their previous use of online applications for teaching/learning activities before covid-19

Table (3): Distribution of the studied nursing academic staff according to their experience of using online applications before covid-19

Variables	Studied nursing academic staff (n=178)	
	No	%
#The program used		
- Zoom	5	2.8
- WebEx	2	1.2
- Microsoft teams	3	1.7
- Edmodo	5	2.8
- Telegram	72	40.9
- WhatsApp	76	43.2
- Moodle (E-Learning)	27	15.4
#Field of use:		
- Communication with students	132	75
- Thesis accomplishment	64	36.3
#Obstacles they faced:		
- No obstacles	40	22.7
- Inadequate time	92	52.3
- Lack of resource	28	15.9
- lack of training	13	7.4
- Careless of technology	5	2.4

More than one answer was allowed

Table (4): Distribution of the studied nursing academic staff according to their experience in use online applications after covid-19

Technological experience after covid-19	Studied nursing academic staff (n=457)	
	No	%
#Forms of technological program use		
- Attendance of committees, workshops or councils	256	56
- Lead a workshop or present a paper in a conference	21	4.6
- Attendance of online conference in Egypt	117	25.6
- Attendance of online workshop in Egypt	136	29.8
- Attendance of online conference outside Egypt	7	1.5
- Attendance of online Workshop outside Egypt	28	6
#Source of technical support to use technological programs		
- Management Information Systems (MIS) videos	179	39.2
- Information Technology (IT) videos	180	39.4
- YouTube videos	145	31.7
- Videos of workshop manager	36	97.9

More than one answer was allowed

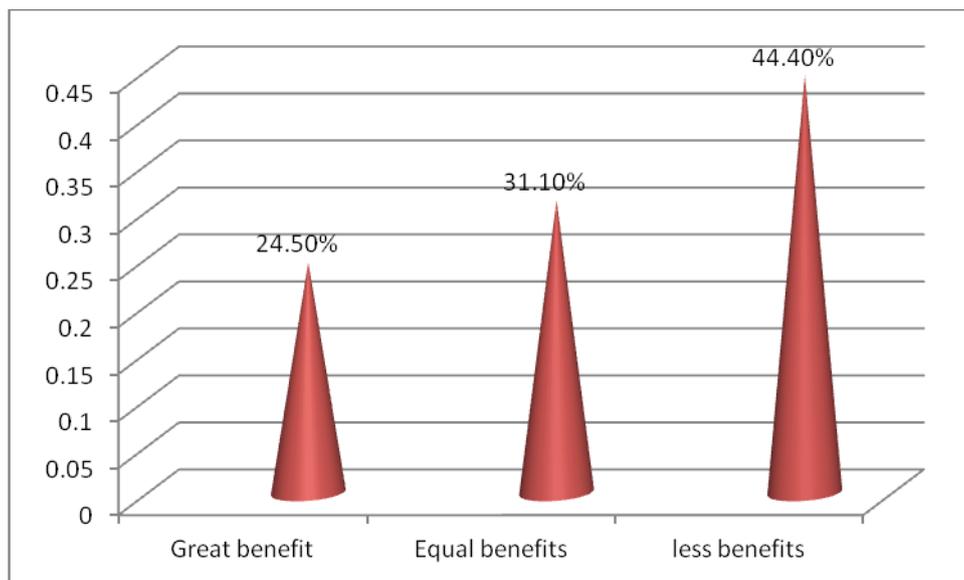


Figure (2): Distribution of the studied nursing academic staff according to their reported benefits of the use of online technological programs in teaching and learning compared to the traditional attendance.

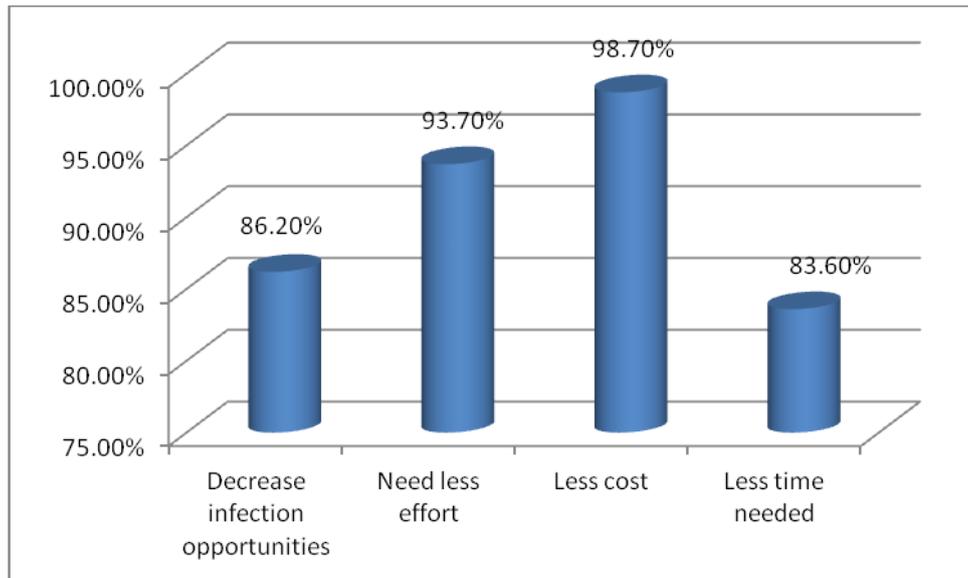


Figure (3): Distribution of the studied nursing academic staff according to knowledge about advantages of using online applications after covid-19 pandemic.

Table (5): Distribution of the studied nursing academic staff according to their competencies of using online applications after Covid-19 pandemic

Domains of competencies	Studied nursing academic staff (n=457)							
	Not at all		Little degree		Moderate degree		Greatly	
	No	%	No	%	No	%	No	%
1. Process and concepts								
- I can use some technological programs to explain theoretical nursing lesson	22	4.8	30	6.6	141	30.9	264	57.8
- I can use some technological programs to explain practical nursing lesson	20	4.4	86	18.8	190	41.6	161	35.2
- I can record voice on power point presentation	20	4.4	52	11.4	110	24.1	257	60.2
- I can prepare and upload an educational video for students	17	3.7	64	14	144	31.5	232	50.8
- I can choose the appropriate technological educational programs through evaluation of the current programs	12	2.6	72	15.8	205	44.9	168	36.8
▪ I can plan for teaching process in the line of new educational technology	11	2.4	65	14.2	185	40.5	196	42.9
2-Assessment and evaluation								
- I can evaluate knowledge and understanding	13	2.8	104	22.8	203	44.4	137	30

skills using technological programs for distance education								
- I can evaluate the students' practical skills using technological programs for distance education	24	5.3	128	28	211	46.2	94	20.6
- I can use technology to develop appropriate strategies to solve teaching and learning problems	13	2.8	89	19.5	219	47.9	136	29.8
3-Productivity								
- I can conduct workshops through programs for distance education	37	8.1	107	23.4	194	42.5	119	26.0
- I can attend workshops through programs for distance education	19	4.2	64	14.0	138	30.2	238	51.6
- I can accomplish supervision tasks for Master and PhD thesis through online technological programs	32	7.0	79	17.3	164	35.9	182	39.8
- I can evaluate and judge for Master and PhD thesis through online technological	57	12.4	84	18.4	180	39.4	136	29.8

programs									
- I can connect with supervisors through online technological programs	4	0.9	62	13.6	187	40.9	204	44.6	
- I can share ideas with the experts and colleagues through internet to develop my educational skills	102	22.4	140	30.6	160	35.0	55	12.0	
4-Ethical and legal issues									
- I know the legal issues of the use of technological educational programs in teaching and learning	73	16.0	107	23.4	190	41.6	87	19.0	
- I know the ethical issues of the use of technological programs in teaching and learning	12	2.6	94	20.6	277	60.6	74	16.2	
Need for training									
The need for developing skills of using technology on teaching and learning	0	0	59	12.9	186	40.7	212	46.4	

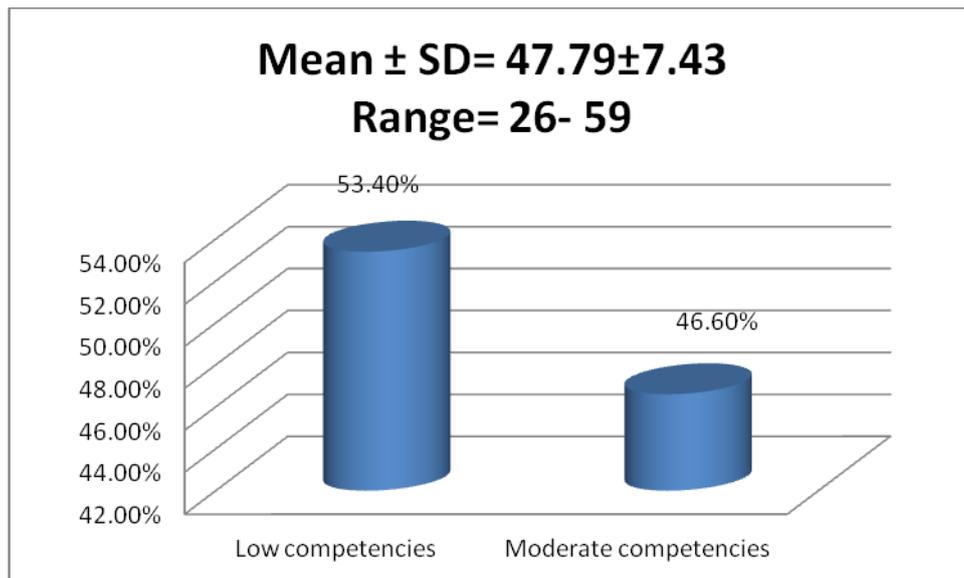


Figure (4): Distribution of the studied nursing academic staff according to the reported level of total competencies score.

Table (6): Distribution of the studied nursing academic staff according to their perception of the importance of technological program for teaching and learning

#Importance of technological programs	Studied nursing academic staff (n=457)	
	No	%
▪ Increase staff competencies	141	30.9
▪ help the staff to be facilitators rather than information givers	175	38.3
▪ Decrease tension of lecture preparation	152	33.3

More than one answer allowed

Table (7): Correlation between the academic nursing staff personal data and their competencies in using technological programs for teaching and learning

Personal data	Technological competencies	
	r	P
Academic degree	.268	<0.001**
Teaching experience	.280	<0.001**

Discussion:

Technology is a tool for learning and has an important place in education. It can enhance teaching opportunities and make teaching easier in many cases. However, the right application and approach are necessary to succeed⁽²³⁻²⁵⁾. The Covid-19 pandemic has raised significant challenges for the higher education community worldwide. A particular challenge has been the urgent and unexpected request for previously face-to-face university courses to be taught online⁽²⁴⁾.

Currently, as a result of the COVID-19 pandemic, online learning has become a critical lifeline for education to minimize the potential for community transmission (Murphy, 2020)⁽²⁶⁾. The competencies of online teaching have to be labeled and prioritized according to the roles the instructors that will actually execute. So, the aim of this study was to determine the effect of COVID-19 pandemic on the competencies of academic staff of nursing faculties regarding the use of online applications in teaching learning / tasks.

According to the findings of the presents study, the personal data of the studied subjects revealed that, the majority of the academic staff was females, more than one third and about one quarter of them were clinical demonstrators or

assistant lecturer respectively. They and had teaching experience less than five years to less than 10 years (Table 1). This may be attributed to the fact that in Egypt, nursing education was limited to females rather than males until short periods. So, the number of male academic staff in nursing faculties was limited.

Additionally, the method used for data collection was web based where the young staff was more interested and more efficient in using internet and social media in communication and connection with others through smart mobile phones or lab tops than the older academic staff. This finding is in agreement with the results of Nikian et al., (2013)⁽²⁷⁾, who assess the Malaysian teachers; perception of applying technology in the classroom. They reported that, regarding the academic degrees earned by the participants, most of them hold a master's degree while some of them possess a bachelor's degree. The teaching experience of the participants varies from three to eight years. Six of the participants are female while one is a male. Meanwhile, this results is disagree with results of Salim et.al., (2018)⁽²⁸⁾, who reported that the majority of the respondents have doctoral qualifications and have taught more than 10 years. This difference may

be attributed to the criteria for selection of the study sample as they selected them from the academic staff who taught at undergraduate and post graduate level that required or necessitate doctoral or post-doctoral qualifications.

As regard to the awareness of nursing academic staff related to the different mode of online teaching and learning, the current study revealed that, about two thirds of the studied subjects were aware of Zoom as a technological program used for distant teaching and learning, followed by WebEx, Microsoft teams, WhatsApp and Telegram which were recognized by less than one fifth of them, while the little percent of them aware that Edmo is one of the technological programs used for distant teaching and learning (**Table 2**). This may be due to the increased attention to the new technology.

This is in contradict with the result of **Salim et al., (2018)**⁽²⁸⁾, who study the academic staff awareness of the New Academia Learning Innovation (NALI) Model (NALI) online learning resources, they reported that the percentage of respondents who were aware of each the online learning resources was at least 61%. Also, **Nikian et al., (2013)**⁽²⁷⁾, reported that, their participants were very familiar with ICT used in teaching / learning task.

As regard the previous use of online applications for teaching and learning tasks, less than two fifths of the studied nursing academic staff mentioned that they previously use the online applications before covid-19 pandemic (**Figure1**). This may be explained as the accepted mode of education according to the courses specification and the internal policy of nursing faculties was face to face method of teaching and there was no need for distance education before the emerging pandemic. This result is consistent with the result of **Rajhans et al., (2020)**⁽³⁾, who reported that only (39.72%) educators had used online teaching mode before COVID-19 lockdown period⁽¹⁾.

Indeed, the current results showed that, Telegram and WhatsApp programs were the most obvious programs that were used by more than two fifths of the studied nursing academic staff who reported that they used the online applications before covid-19 pandemic followed by the Moodle that was used by less than one fifth of them for the purposes of Electronic courses (**Table 3**). This may be explained as the highest frequencies of the studied subjects were either clinical demonstrators or assistant lecturer with teaching experience less than 10 years which indicate the lower age of the participants

who belong to the category of digital natives who are familiar with and rely on ICT in their daily lives.

This result is in accordance with the result of **Mishra et al., (2020)**⁽²⁹⁾, who found that almost all of their participants were using WhatsApp, Telegram and email for educational interaction⁽²⁹⁾. In the same line, the result of **Essel et al. (2020)**⁽³⁰⁾, who found that social media platforms was rated as the most used applications for teaching, communication, and management of information⁽³⁰⁾. While, contradicts with **Salim et al., (2018)**⁽²⁸⁾ who mentioned that the most used source was e-learning.

Concerning to Zoom, Webex, Microsoft teams and Edmodo, only very little percentage of them mentioned that they used these programs in teaching and learning before covid-19 pandemic (**Table**). This result may be due to the unfamiliarity of these programs before the pandemic where there was no need for using it. This is in accordance with the result of **Rajhans et al., (2020)**⁽³⁾, who stated that in their 2018 survey showed that the optometry education system was a conventional classroom-based system with most teaching and assessment conducted in face to face mode.

As for the field of using these programs, three quarters of those who used these

programs before the pandemic reported that, they used them to communicate with their students. (**Table 3**). This disagrees with the result of **Essel et. Al., (2020)**⁽³⁰⁾, who observed that most of the nursing faculty used social media for personal rather than for academic purpose. Furthermore, the current study revealed that, more than one third of the academic nursing staff used it for thesis accomplishment. This is in consistent with **McMartin et al. (2008)**⁽³¹⁾, who stated that the type of digital resource most likely to be used was that of Scholarly Resources, for the purpose of professional development as a teacher.

As regard to the obstacles that the academics staff faced while using on line programs for teaching/learning tasks, the highest percentages of the studied subjects mentioned that, inadequate time was the main obstacles faced them, followed by lack of resources and lack of training (**Table 3**). This result is consistent with the result of **Joshi et al., (2020)**⁽³²⁾, **Mishra et al., (2020)**⁽²⁹⁾, **Essel et al., (2020)**⁽³⁰⁾, who reported that, poor training of teachers in ICT, lack of ICT infrastructure, the lack of technical support for ICT integration, were considered key barriers to the effective integration of ICT into teaching and learning in the nursing and midwifery

colleges. **McMartin et al., (2008)**⁽³¹⁾, reported that one of the main obstacles in using the online learning resources among the instructors in higher learning institutions was time constraint. In the same line, **Miralles-Martínez, (2014)**⁽³³⁾, mentioned that the sudden change of teaching activity from the face-to-face to the online modality reveals the existence of three obstacles: the access obstacle (having or not having access to connection and technological devices); the use obstacle (time of use and its quality); and the gap in teacher skills, availability of resources, and adaptation of online platforms to support teaching.

In response to Covid-19 emergency situation, teachers have been asked to use online applications which few have fluently mastered. The current findings revealed that, after Covid-19 pandemic more than half of the studied nursing academic staff used online applications either in attending committees, workshops or councils. More than one quarter of them attended online conferences or workshop inside Egypt respectively. Meanwhile, 9 % of the studied academic staff attended an online workshop outside Egypt (**Table 4**). These results may be due to the easy access to these activities related to economic and time factor in addition to the

massive increase in this workshops and webinars all over the world. In accordance, the study by **Al-Taweel et al., (2020)**⁽³⁴⁾, revealed that, although most academics did not use these technologies regularly for teaching, meetings or services before, the current crisis has pushed people out of their comfort zones in order to respond to this urgent need that moved work from being “on campus” to “in house” teaching and learning.

Also, **Dhawan (2020)**⁽³⁵⁾, stated that e-application as ZOOM is making a lot of news because of its viable features. It allows conducting live online classes, web-conferencing, webinars, video chats, and live meetings⁽³⁵⁾. Also, **Rajhans et al., (2020)**⁽³⁾, their findings of the 2020 survey suggest that more than 90% educators in India have quickly adapted to E-learning mode. The trend in pedagogy for theoretical content has shifted from monotonous didactic lectures to interactive online lectures using video conferencing tools (e.g. Google meet, Microsoft teams, Zoom, etc.).

As regard to the source of technical support to use the technological programs, most of the studied nursing academic staff had their technical support from videos of the workshop managers, while about two fifths of them had the technical support

either from the videos of MIS or IT Units in their faculties respectively (**Table 4**). This is supported by the study of **Ertmer et al. (2012)**⁽³⁶⁾, who mentioned that teachers receive most of their technical support from technology coordinators and social networking sites. Also, **Rajhans et al., (2020)**⁽³⁾, reported that the educators obtained the help through the IT support from the institution which identified as a major factor contributing to the quick and smooth transition to online learning.

Regarding the benefits of using online applications for teaching and learning by the studied nursing academic staff, the finding of the presents study revealed that about one quarter and less than one third of them reported that, they had got great or equal benefits respectively, while less than one half of them got fewer benefits from the use of online learning programs compared to the traditional attendance (**Figure 2**). This may be returned to most of the curriculums of faculty of nursing depended on practices and demonstration and re-demonstration, so the using of online teaching is ineffective in learning the practice part. Moreover, this result pointed out that we cannot shifted totally from face to face approach to online one in nursing education, but blended approach is more beneficial.

This in accordance with the study done by **Mukhtar (2020)**⁽³⁷⁾, who mentioned that faculty members and students said that through online learning modalities they were unable to teach and learn practical and clinical work. They could only teach and assess knowledge component. Due to lack of immediate feedback, teachers were unable to assess students' understanding during online lecturing. On the other hand, this result is disagreeing with the results of **McMartin et al.,(2008)**⁽³¹⁾, they found that the vast majority of respondents felt digital resources were of "great value" to their instruction, potentially skewing the sample.

As for the advantages of using online technological programs after covid-19 pandemic, most of the studied subjects reported that, the use of the online programs needs less effort and less cost respectively. While the majority of them mentioned that, it decreases the opportunities of infection and need less time respectively (**Figure 3**). This may be attributed to the huge number of webinars and workshops that were available for all the staff through online models at home environment that didn't require money or efforts as most of them were just attendance of these webinars.

This is in accordance with **Fedynich (2014)** ⁽³⁸⁾ and **Yilmaz (2019)** ⁽³⁹⁾, who reported that the online learning has several advantages: For instance, it does not depend on being in the same physical location and can thus increase participation rates. In addition, it can be cost-effective because online learning reduces travel and other costs required to attend in-person classes and may provide learning opportunities for adult students while also engaged in full-time or part-time jobs ^(1,39). Regarding to the perception of the studied nursing academic staff about the importance of technological program for teaching and learning, more than one third of them reported that, online technological programs help the staff to be facilitators rather than information givers. Also, one third of them mentioned that it decreases tension of lecture preparation, while less than one third of the mentioned that it increases staff competencies (**Table 6**). This can be supported by research findings of **Essel et al., (2020)** ⁽³⁰⁾, and **Robinson-basseyy and Edet (2015)** ⁽⁴⁰⁾, who stated that most of the participants in their studies agreed that ICT facilitates interaction and collaboration with colleagues and students. According to **Lauermann (2016)** ⁽⁴¹⁾ and **Geng et al., (2019)** ⁽⁴²⁾, when there is a shift from a teacher-controlled

environment to a more learner-controlled environment, the role of the educator becomes more of a facilitator and minimal scaffolding may be required. Obviously, the teaching staff members in form of professors, lecturers and teaching assistants are the key players in the effective implementation of ICT integrated learning (**Aydin, 2012; Buabeng-Andoh, 2015; Sipilä, 2011**) ⁽⁴³⁻⁴⁵⁾.

Competency in online teaching is important to examine because teachers with higher competency are more likely to persist through negative outcome expectations and experiences. Competencies for online instruction have been categorized at different levels in the literature, and several approaches have been adopted to classify them. In the current study, the researchers assess the nursing faculties' staff related to technology operations and concepts; assessment and evaluation; productivity and professional practice; ethical and legal, issues and their need for training ⁽⁴⁶⁾.

In this regard, the current study revealed that more than half of the studied subjects reported low technological competencies while the rest of them reported moderate level of technological competency (**Figure 4**). This result could be explained as the majority of the studied subjects were of

less teaching experience and that they were not responsible of planning or designing the theoretical lessons. In addition, this could be due to the sudden integration of the online education due to the closure of universities without required training. Generally, Faculty members receive very little or no training and preparation for online teaching.

As regard to the studies subjects' competency related to the process and concept and assessment and evaluation domains, the present study found that the highest percentages of the studied academic staff reported great or moderate competency. This is in accordance of the result of **Horvitz et al., (2020)**⁽⁴⁷⁾, who found that their respondents had higher self-efficacy in the use of online instructional strategies (which includes items such as adjusting material to meet learning styles and using a variety of assessment approaches).

As regard to the studied subjects need for training, the result of current study revealed that nearly about half of them mentioned that they greatly or moderately in need for technological training. This result is consistent with **Kirstein (2020)**⁽⁴⁸⁾, who reported that, the participants indicated a strong need for a professional development plan, with a

specific focus on their own individual need(s) regarding technology.

The findings of present study revealed that, there were strong significant positive correlations between the academic degree and teaching experience of the studied staff and their competencies in using technological programs for teaching and learning ($p = <0.001$ and <0.001) respectively (**Table 7**). This means that the increase in the teaching experience and the higher academic degree are associated with higher level of competency in using the online technological program among the academic nursing staff and their competency in teaching as general. This may attribute to their teaching experience. In the same line, **Chang et al. (2011)**⁽⁴⁹⁾, found that “faculty members with less than six years of teaching experience indicate lower perceptions of teaching efficacy in course design than other faculty members”. On the contrary, the finding of **Odigwe and Owan, (2020)**⁽⁵⁰⁾, suggests that the competency in utilization of ICT services decreases as lecturers' rank increases. This finding was attributed to the increasing responsibilities of staff of higher academic ranks.

Every day technology shows many advances in the use of online application for teaching/ learning process. So,

continuous effort and trepanning should be done either on the individual or institutional levels to enhance competencies of the academic nursing staff to master distance education.

Conclusion:

Based on the result of the current study it was concluded that, before COVID-19 pandemic, only less than two fifths of the studied subjects used the online applications for teaching/learning process. After COVID-19 there was a great transition to the use of technological online applications in teaching and learning, more than half of the studied subjects use the online application either for teaching purposes or for other faculties' tasks. However, more than half of studied academic staff had low competency level regarding use of the online educational programs for teaching/learning activities and nearly half of them demonstrated that they had a great need for training to develop their skills of using technology on teaching and learning.

Recommendations:

Based on the results of the current study it was recommended that:

- Along with the existing challenges in managing teaching and evaluation during the COVID-19 outbreak, universities have to prepare a road map

to accommodate admissions for coming academic sessions.

- Training for academic nursing staff on how to teach remotely: tailoring the training to allow each academic staff member to define their own plan for content, goals, and learning assessment within the new modality.
- Provide technical support to academic staff to transition, where possible
- Universities and faculties must ensure supporting instructors in transitioning to online teaching via professional development and technical support as possible.
- Distance education managers must revise their respective reward systems to provide faculty incentives for teaching in a distance education.
- Further researches must be carried out to assess the competencies level and factors affecting it.

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