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## IMPACT OF E-LEARNING AMONG NURSING STUDENTS DURING COVID-19 PANDEMIC-INTEGRATED REVIEW

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### ABSTRACT

**Background:** COVID-19 pandemic has inevitably changed our needs to be dependent on technology to stay connected to people, education, health care and all spectra of daily life. E-learning has unique advantages, overcoming barriers of introversion and physical distance, creating new ways to communicate and shaping professional identity during crisis situation. **Objectives:** The integrated review summarizes the impact of E-learning among nursing education and explores the possible opportunities to continue the standards in nursing education. **Methods:** A comprehensive literature search was done to identify the impact of e-learning in nursing education. Seventeen primary articles meeting inclusive criteria, published from the onset of COVID-19 until 5<sup>th</sup> October 2021 were included in this integrated review. **Results:** The review literature explores that E-learning is affected by internet issues, technical gadgets, lack of computer literacy and problem with electricity. The students were lack in clinical demonstration, negative attitude towards e-learning, Fatigue and stress due to online classes. At the same way, it is found that e-learning deliver the alternative method of education in nursing curriculum however the practical training remains indispensable. **Conclusion:** The effective E-learning intervention can support the development of nursing student's skills, knowledge, and attitude during COVID remarkable situation.

### KEYWORDS

COVID-19, E-learning, Impact, Stress and Fatigue.

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### INTRODUCTION

COVID-19 is an infectious disease caused by a newly discovered coronavirus. Formerly, this disease was referred to as '2019 novel coronavirus'. COVID-19 was first discovered in Wuhan, China in December 2019. In Worldwide 2,42,904,646 people affected by COVID-19 and 4,939,739 deaths as of October 21<sup>st</sup> 2021<sup>1</sup>. The pandemic Covid-19 has spread all over the world and enforced the human

society to maintain social distancing. It has significantly disrupted the nursing education which is critical determinant of a country's health sector. Globally 800 million learners have been affected during the crisis situation<sup>2</sup>. The declaration of COVID-19 World Health Organization forced many countries to choose online mode of nursing education. Hence, it is essential for the educators to find out students' perception that ensures their readiness to learn in this new environment<sup>1</sup>. Considering compounding pandemic and the requirement of scholarly continuation the majority of the nursing organizations have moved quickly from customary technique instruction to web based learning by restricting face-to-face classroom communications. Whats App, zoom and Google meet are some of the apps used for conducting online classes. Some organizations have fostered their own software for online classes. It is almost a new notion for the nursing students to conduct online classes during lock down<sup>3</sup>.

Theory learning can be substituted to a great extend via online teaching .High fidelity simulation training and demonstration has taken during online classes<sup>4</sup>. The process of integrating e-learning into teaching and learning can be a complex procedure that may face several difficulties that are sometimes called barriers or obstacles to integrating e-learning<sup>5</sup>. Teaching faculties in nursing are insisted to upgrade themselves with use of technology, preparing e-modules, e-lessons and their evaluations. Nursing students needs to have computer knowledge and infrastructure to access the e-learning<sup>6</sup>. Especially in nursing education, clinical training and evaluation of skills might be challenging without teachers being directly supervised in health care sectors<sup>7</sup>.

A meta-analysis regarding recent trends in educational technology during COVID-19. The study revealed that using educational technology in teaching and learning was appropriate. Most of the nursing students enrolled in online classes are satisfied with the mode of learning<sup>8</sup>. In view of E-learning Education Problems Facing Nursing Students in Jordanian universities, the students in public sector experienced more problems in lecture method, exams, faculties, clinical training,

curriculum, textbook and technological gadgets in online education than private sector<sup>9</sup>. On the basis of cross-sectional survey 47.2% of students were experienced very stressful and 37% of the students were done poor academic performance during E-learning<sup>10</sup>.

### **Significance of the study**

COVID-19 created unparalleled stressful situations for nursing students. These Crises can affect the academic function of nursing students. Nurse educators must have competency to overcome theses stressors and to create the innovative solutions during critical situation. E-Learning has emerged as a practical solution for education in class room teaching as well as hospital setting. Virtual teaching in a clinical environment is challenging for all health care organizations. Transformation from lecture method to completely virtual teaching and learning there are various challenges faced by the nurse educators, and the students. But how far the nursing institution geared up for this challenge. Hence special care should be taken during E-learning to ensure the maximum learning among students.

At this critical juncture, it is important to evaluate if these current e-learning teaching methods are feasible, acceptable, and as effective as in-class teaching. As a stakeholders we need to identify the feasibility and acceptability of e-learning among nursing students during COVID unstable dynamic situation. This integrated review analyzed the impact of e-learning among nursing students during COVID pandemic.

## **METHODOLOGY**

### **Search strategy**

A comprehensive literature search was done in Google Scholar, PubMed/Medline, Embase, science direct, Directory of Open Access Journals, Complementary Index, Scopus and Cumulative Index to Nursing and Allied Health Literature, and web of science data base from 2019-2021.

The search key used were e-learning education programs in nursing , satisfaction of e-learning in nursing education, virtual education during COVID among nursing students, nursing students perception

among e-learning, nursing students experience to remote learning during COVID.

#### **Inclusion criteria**

Studies were included if they fulfilled the following criteria:

Studies conducted among nursing students attending e-learning during pandemic.

#### **Exclusion criteria**

Studies conducted among other medical professional attending e-learning.

#### **Limitation**

Studies limited only to nursing students attending e-learning during pandemic.

#### **Data extraction**

The extract of the reviewed article were independently reviewed by two reviewers (J. Menaka, M. Nithya) Difference were resolved through discussion. Table were designed to record the details of the studies selected.

#### **Findings**

A total of 19 article were identified independently by the researchers. After 2 were removed due to full text not available in English. 17 primary article meeting inclusion criteria published from the onset of COVID-19 until 5<sup>th</sup> October were included in this integrated review.

A total of studies conducted among nursing students were Egypt-1, Himachal Pradesh-1, Philippines-1, Saudi Arabia-2, Northwestern United States-1, China-1, India-3, Jordan-1, Spain-1, Indonesia-1, Nepal-4. Most of the studies (12) were cross sectional descriptive research studies, four of them are cross sectional descriptive correlational research studies and one is quantitative inductive thematic analysis.

### **RESULTS AND DISCUSSION**

E-learning is essential at current times but is not an effective alternative for nursing education during their clinical practice. Most of the nursing students had given negative remarks with respect to cooperation and concentration, demonstration, content, and technological/infrastructural flaws. There was a significant disappointment with respect to the theory and clinical learning<sup>11</sup>. Though e-learning was implemented as a substitute during the

pandemic, almost half of the nursing students showed a positive attitude regarding e-learning<sup>4</sup>. Online learning is a virtual learning system which integrates internet connection with teaching and learning process. Majority of the students (91.7%) felt that online classes should be continued during this pandemic. Nearly two third of the respondents (63.2%) are satisfied from the online classes using ZOOM application<sup>12</sup>. Students in the public sector facing more problems to utilizing e-learning than in the private sector related to lectures, exams, clinical training, faculty members, curriculum, textbook, technological gadget for e-learning. Male students faced more problem ( $p=0.05$ ) in their different year levels during e-learning education<sup>9</sup>.

Stress negatively interrupt the nursing students in their academic performance. Majority (91.1%) of the students were outbreak to be stress. Moreover (37%) of the nursing students had low satisfaction on e-learning during the COVID-19 outbreak. E-learning stress had inverse correlation with online learning satisfaction ( $p=.000$ ) and academic performance ( $p=.012$ ).<sup>10</sup> E-learning teaching is the substituting the teaching of theory. Although face-to-face teaching is preferred the clinical practices are indispensable for the training of the nursing students. It brings more limitations to students who are living in a rural environment and with limited electronic resources<sup>13</sup>. The greater part of the students (63.2%) were affected because of electricity and 63.6% internet problem, only 64.4% of the students had internet access for their online classes and there is a significant association of Selected Demographic variables with attitude and problems/activities ( $P$ -value  $<0.05$ )<sup>14</sup>.

The fatigue in students during the online learning process is caused by the given assignment, the absence of a face-to-face meeting, the adaptation process with the home environment. The severe fatigue was found with (48.2%) respondents. meanwhile, the rest respondents (52.8%) experienced mild fatigue. It means that there is a correlation between coping mechanisms and fatigue ( $P<0.05$ )<sup>15</sup>. Almost 50.46% reported feeling of being overloaded and eye staining (70.6%) after e-learning<sup>16</sup>.

Most of the (65.7%) students had participated during online classes. Half of the (54.3%) students disagreed that E-learning is useful for practical courses. 47.1% of students strongly agreed that online class saved time and 27.1% of them strongly agreed that they were bothered by the lecture on the internet because of the internet problem<sup>17</sup>.

**Table No.1: Summary of the included studies**

S.No	Author name and year	Study purpose	Study settings	Sample	Methodology	Key findings
1	Gehan Mohamed Abd El-Hamed Diab, Nahid Fouad Elgahsh (2020) <sup>18</sup>	To investigate the effect of obstacles faced nursing students on their attitudes towards e-learning COVID-19 pandemic.	Egypt	627 nursing students	A descriptive correlational research design	Negative attitudes towards E-learning is 61.6% and it is highest (67.6%) among First year students.
2	Simarjeet Kaur and Ms. Anjali Sharma (2020) <sup>4</sup>	To assess the perception and issues regarding online learning during lockdown among nursing students	Himachal Pradesh.	278 students	A quantitative approach and cross sectional survey	Majority (77.7%) of participants responded that classroom teaching is the best teaching learning method and 32.3% of them responded that online learning is less interactive and difficult to operate.
3	Amira Mohamed Saad Mohammed Khalil (2021) <sup>17</sup>	Aimed to assess the practice and attitude of nursing students towards electronic learning during the COVID-19 pandemic	Saudi Arabia	140 nursing students	A cross-sectional descriptive study	Most of the (65.7%) students had positive attitude during online classes. Half of the (54.3%) students disagreed that E-learning is useful for practical courses.
4	Ryan Michael F Oducado I, Homelo V. Estoque (2021) <sup>10</sup>	The aim to determine the undergraduate nursing students' stress, satisfaction, and academic performance during online learning.	Philippines	108 nursing students	cross-sectional and descriptive-correlational study	Most of the students were very stressful (47.2%) while attending E-learning classes.
5	Sharon Wallace PhD, MSN, RN 2020 <sup>19</sup>	Nursing student experiences of remote learning during the Covid-19 pandemic	Northwestern United States	300 students	qualitative descriptive design	Students demonstrated a remarkable sense of resilience and perseverance.
6	Wen Li (2021) <sup>20</sup>	The aim of this study was to explore the quality of the online education	China	Overall, 230 students	survey	It was found that 36.5% of students and 61.1% of teachers were satisfied with the online education.
7	Alqahtani, et al (2021) <sup>21</sup>	The purpose was to determine factors associated with students' satisfaction with e-learning nursing students.	Saudi	139 nursing students	A cross-sectional, correlational descriptive study	Previous experience with readiness for e-learning influenced students overall satisfaction.

8	Dipti Koirala <i>et al</i> (2020) <sup>12</sup>	Perception towards Online Classes during COVID-19 among Nursing Students	Nepal	133 nursing students	A cross-sectional study	Majority of the students (91.7%) felt that online classes should be continued during this pandemic. Nearly two third of the respondents (63.2%) were satisfied from the online classes. Overall, 54.1% had negative perception towards online classes.
9	Tri Nurhidayati <i>et al</i> (2021) <sup>15</sup>	Aimed to analyze students' coping strategies for burnout and fatigue from online learning during the COVID-19 pandemic	Indonesia	83 nursing students	quantitative research with a descriptive correlation design and cross-sectional approach	Most of the(56.6%) nursing students had positive coping, severe burnout (85.5%), fatigue (48.2%) and there was a significant correlate between nursing students coping and fatigue (P=0.01)
10	Hemant Kumar Singh, <i>et al</i> (2021) <sup>22</sup>	Aim to evaluate the e-learning teaching methods are as feasible, acceptable, and effective as in-class teaching for nursing students.	India	684 nursing students	Cross sectional research design	Majority of the (60%) students prefer to designing the optimum duration <40 min with at least 10 min gap between the classes and maximum of 2-4 hrs of classes a day
11	Suvashri Sasmal Moitreyee Roy, (2021) <sup>16</sup>	Aimed to identify the perception of the undergraduate nursing students towards E-learning during COVID-19 phase	Kolkata, India	327 sample	A descriptive cross-sectional web-based survey	Majority (70.03%) of the respondents agreed that e-learning helped them to understand theoretical sessions. 80.43% agreed to prefer traditional classroom session over e-learning
12	Sunita Rana, Chandra Kumari Garbuj, Geeta Rai (2021) <sup>23</sup>	To examine the perception of online learning among nursing students	Nepal	211 nursing students	A cross-sectional descriptive design	All (100%) had mobile. Most 93.8% had internet facility at home. More than half 56.9% participant had positive perception towards e-learning and 43.1% of students strongly agree that face to face learning was more effective.
13	Ola Ahmad Kutah (2020) <sup>9</sup>	E-learning Education Problems Facing Nursing Students in Jordanian Universities During COVID-19 Pandemic Confinement	Jordan	260 nursing faculties	A descriptive cross-sectional approach	Most of the students (80%) had high level of problems related to lectures, exams, clinical training, curriculum, technical gadgets and they faced medium level of problems related to faculty members.
14	Siddhartha Dutta <i>et al</i> (2021) <sup>11</sup>	The Satisfaction Level of Undergraduate Nursing Students Regarding	India	145 students	This was a cross-sectional,	Majority 56% of the nursing students were satisfied, 44% were not satisfied in distants

		Distant Preclinical and Clinical Teaching Amidst COVID-19			observational questionnaire-based study	preclinical and clinical teaching.
15	Antonio Jesús Ramos-Morcillo <i>et al</i> (2020) <sup>13</sup>	Experiences of Nursing Students during the Abrupt Change from Face-to-Face to e-Learning Education during the First Month of Confinement Due to COVID-19	Spain	Thirty-two students	Qualitative study	E-learning brings more limitations to older students, with work and family responsibilities, problem with electronic resources.
16	Suraksha Subedi <i>et al</i> (2020) <sup>14</sup>	The aim to assess the impact of E-learning during the COVID-19 pandemic among Nursing students	Nepal	1116 students	A descriptive cross-sectional online survey was conducted	More than half of the students (63.2%) were affected because of electricity and 63.6% internet problem
17	Pratima Thapa <i>et al</i> (2021) <sup>24</sup>	Nursing students' attitude on the practice of e-learning:	Nepal	470 students	Descriptive web-based cross-sectional study design was used	The students(58.9%) had a positive attitude regarding e-learning

## CONCLUSION

Based on the literature reviewed we conclude that e-learning class were ultimate choice for continuing education for nursing students during COVID-19. Most of the students were actively enrolled in virtual learning. One third of students were listed the problem to attend the e-learning such as network problem, non availability of gadgets, difficult in understanding, lack of clinical demonstration. This can affect academic performance of nursing students. Hence the efforts should be taken to make e-learning teaching more interactive and functional which will create student's own learning environment. This will enhance the student's satisfaction level and reduce the stress also. In order to overcome the hurdles of online study, there should be proper time schedule, adequate network facilities, Effective student-teacher interaction activities, sufficient educational learning material etc. Hence this integrated review not only will help to assess the impact of e-learning among nursing students but also helps the institutions to prepare internet based online education delivery which will be beneficial for students during pandemics such as COVID-19 or emergency situation.

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## CONFLICT OF INTEREST

No conflict of interest was identified.

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## ETHICAL CONSIDERATION

Not applicable.

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