

# E-Learning; Barriers and Opportunities; Nursing Students Perspectives.

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## Abstract

**Background:** E-learning consists of the use for education purposes of the internet and related devices. Internet learning and teaching are a new experience especially after the coronavirus pandemic outbreak for most teachers and students. **Aim:** was to assess barriers and opportunities faced by nursing students during applying e-learning. **Design:** A descriptive correlational research design was utilized to conduct the aim of this study. **Setting:** This study was conducted in the Faculty of Nursing, Benha University, Egypt. **Subjects:** A stratified random sample technique was employed for the selection of 10 % from the students in each of the four academic years enrolled in Faculty of Nursing, Benha University during the academic year 2019/2020. **Tools:** Interviewing questionnaire including demographic characteristics and background on utilizing technology, opportunities and Barriers of e-learning questionnaires. **Results:** The majorities of the studied students were female and were living in rural area. Also There were a highly statistical significant difference between students live in rural areas and students live in urban areas regarding presence of internet facility at home and qualification in using computer and internet, more than half of students choose U tube application as the most effective tool for e- learning and preferred the use of mobile devices in e-learning activities. The majority of the nursing students had positive perception ranging from neutral to agree regarding e-learning opportunities items. Majority of nursing students of the three academic years from second to forth academic years had neutral agreement with the presence e-learning barriers While, the first year students had the highest level of agreement with the presence e-learning barriers. **Recommendations:** Enhance Internet speed and make Internet packages cheaper or even free. Provide e-learning tools and computer skills training for students. Enhance educational methods in order to motivate students to learn and entice them to enroll in online courses.

**Keywords:** E- learning, Opportunities, Barriers, Nursing Students

## Introduction

Technologies, such as artificial intelligence, have transformed traditional education into a modern mode of learning. Thus, e-learning is a broader term that encompasses technology-based education via websites, video conferencing, YouTube, and mobile apps. (Palvia, et al., 2018; Rai and Chunrao, 2016).

E-learning can be defined as "the use of computer information to increase learners' awareness and skills in order to provide a variety of learning and performance-enhancing solutions." Information and Communication Technologies (ICT) have altered our lives, and e-learning offers a variety of effective instructional strategies (Adas and Shmais, 2011). It can

encompass a range of activities, ranging from the use of technology to support learning as part of a 'blended' approach (a mix of traditional and e-learning approaches) to entirely online learning. E-learning provides students with an alternative method of instruction. E-learning is not time or location-bound; it can occur at home, at work, or anywhere else via internet-connected computers or mobile devices (Aljawarneh, 2020; Green and Huntington, 2017; Mohammad, et al., 2017).

For higher education institutions it is important to use e-learning to improve student learning opportunities and increase learning results, skills, compete with other organizations, and achieve financial security. (Gros and García-Peñalvo, 2016;

**Health Regulations, 2005; Kebritchi, et al., 2017).** Universities worldwide are trying to take advantage of the technological revolution and offer different stakeholders a better educational learning environment (**Azhari and Ming, 2015; Nicola, et al., 2020; Obaid Ullah, et al., 2017).**

The teacher is given several opportunities through e-learning programs to turn the knowledge source into a facilitator and role model for the process of acquiring knowledge and skills (**Butorac, et al., 2011; Di Vaio, et al., 2020).** Teachers can develop several flexible student understanding programs. The use of online learning tests educators and students alike. It improves the ability of students to solve problems, think critically and adapt. E-learning has numerous opportunities for radical transformations in almost all aspects of education including education, education, learning, evaluation and evaluation. (**Gros and García-Peñalvo, 2016).** In terms of flexibility, comfort and ease of virtual learning, E-learning provides students with technical and logistic benefits and may need not necessarily attend an online classroom lecture that saves time and money when they are travelling (**Hong, et al., 2020).**

Modern distance learning teachers and students are split up by time and space but hardware and software telecommunications enable interaction and collaboration. Some of the tools used in online courses include: (a) email, (b) chat rooms, (c) chat rooms, (d) newsletters, (e) file transfer protocol and (f) audio and video electronics (**Bhuasiri, et al., 2012; Bower, et al., 2015; Favale, et al., 2020).**

Although e-learning offers numerous educational benefits to higher education institutions. On the other hand, numerous challenges and impediments continue to obstruct its effective use. (**Hong, et al., 2020).** Worldwide, higher education institutions face a variety of challenges when it comes) to successfully implementing, maintaining, and developing

online programs. The Middle East faces a number of challenges when it comes to online learning, including low internet penetration, a lack of public support for online education, and a shortage of online educational repositories. (**Gros and García-Peñalvo, 2016).**

Universities have implemented e-learning despite a lack of experience or preparation for using e-resources in the teaching and learning process, particularly when teachers and students do not understand how to use online applications (**Martin, 2020).** E-learning is confronted with numerous barriers, including those posed by learners, educators, and content. Engaging students and involving them in the teaching-learning process is a challenge for institutions. Teachers face difficulties transitioning from offline to online mode, altering their teaching methodologies and managing their time. It's difficult to create content that not only meets the curriculum requirements but also engages students. The quality of online learning programs is a significant issue. (**Kebritchi, et al., 2017).**

E-learning requires a significant investment of time and money. It is not as simple as it appears in terms of equipment maintenance, human resource training, and developing online content. As a result, an effective and efficient educational system for online education must be developed. Inadequate access to digital tools, the internet, or Wi-Fi can create a slew of problems, resulting in many students missing out on learning opportunities. (**Martin, 2020).**

Additionally, they must ensure that all educational apps work on mobile devices in the event that students do not have laptops. Staff members are responsible for determining the most effective method of imparting education to their students and implementing it. Academic institutions can create a step-by-step guide to teach staff and students how to access and use various e-learning tools, as well as how to cover major curriculum content using these

technologies, thereby reducing digital illiteracy. Staff members can present the curriculum in a variety of formats, including videos, audio files, and text. It is advantageous for educators to supplement their lectures with video chats, virtual meetings, and similar activities in order to receive immediate feedback and maintain a personal connection with their students. (Saxena, 2020).

#### Significance of the study:

Nowadays, with the rapid growth of knowledge, a new approach known as e learning has been developed to provide educational content globally via the computer network. (Al-Azawei, et al., 2016). Educational institutions around the world (in 192 countries) have either temporarily closed or implemented localized closures affecting about 1.7 billion of students population worldwide (UNESCO.Education, 2020). The Ministry of Higher Education in Egypt called on using e-learning as a means to ensure the continuity of the educational process and not to lose an academic year for students. Therefore, the Faculty of Nursing, Benha University, sought to introduce and apply an e learning system to complete the teaching of courses. Since it was a new experience for Benha University on using the e-learning system. So, the present study aimed to assess barriers and opportunities faced by nursing students during applying e-learning. (Hew, 2018).

#### Aim of the Study

The aim of this study was to assess barriers and opportunities faced by nursing students during applying e-learning.

#### Research Questions

1. What is the nursing students' Background on utilizing technology?
2. What are the common opportunities faced by nursing students during applying e-learning?
3. What are the common barriers faced by nursing students during applying e-learning?

4. Is there a relation between the nursing students' demographics characters and barriers faced during applying e-learning?

#### Subjects and Methods

##### Research Design

Descriptive Correlational design was utilized to fulfill the aim of this study.

##### Variables of the Study

##### Independent Variable

- E-learning barrier issues which included: Learners', staff characteristics, Infrastructure, Technical problem issues and curriculum content issues.
- E-learning opportunities issues which included: E-learning Effectiveness and Motivation issues.

##### Dependent Variable

Background of Nursing Students on utilizing technology.

##### Study Setting

The current was conducted at Faculty of Nursing, Benha University, Egypt.

##### Sampling

A stratified random sample technique was used to select students enrolled in the Baccalaureate nursing program during each of the four academic years, faculty of nursing, Benha University during the academic year 2019/2020. According to the following sample equation:

$$SS = \frac{Z^2 * P * (1-P)}{C^2} \quad \text{where:}$$

Z= 1.96 for confidence level 95%.

P= 0.5 used for sample size needed.

C= confidence interval 6.

The sample size was 241 student (76 were in the first year, 67 were in the second year, 53 were in the third year and 45 were in the fourth year) out of 2458 students enrolled in the first to fourth years (771, 685, 543, 459) respectively.

##### Inclusion Criteria

Students currently enrolled in the 2019-2020 academic year and willing to participate in the study.

### Tools for Data Collection

To fulfill the aim of the study, three tools were used for data collection.

#### Tool I: Interviewing questionnaire

The researchers developed this sheet based on pertinent literature (Mahlangu, 2018; Mahmoud, et al., 2015). A questionnaire was used to elicit demographic information such as gender, residence, and academic years, as well as background information on utilizing technology, such as devices for e-learning activities, internet access at home, qualification in using a computer and the internet, and the source of support for technology skills.

**Tool II: Opportunities of E-learning Questionnaire:** It was developed by the researchers based on relevant literature (Abbasi, et al., 2020; Aravanakumar, et al., 2019; Azzi-Huck and Shmis, 2020; Betihavas, et al., 2016; Bhatia, 2011; Mislinawati and Nurmasiyah, 2018; omás, et al., 2017). It consisted of 12 questions. It contained two issues: e-learning effectiveness 7 items and e-learning Motivation 5 items.

#### Scoring system:

Subjects' responses were graded on a three-point Likert Scale ranging from "0" to "1." (disagree). "1" (neutral), and "1" (neutral)(agree). The items' scores were added together and the total divided by the number of items, yielding a mean score for each e-learning domain. These scores were then converted to a percentile ranking. Scores of less than 60% were considered negative perceptions of e-learning, whereas scores of 60% and greater were considered positive perceptions of e-learning.

**Tool III: Barriers of E-learning Questionnaire:** It was developed by the researchers based on relevant literature (Al-Azawei, et al., 2016; Aljaraideh and Al Bataineh, 2019). It consisted of 23 questions to identify barriers facing nursing students during applying the e-learning system. It contains five issues: Learners' characteristics 4 items, academic staff' characteristics 6 items, technical problem

issues 5 items, Infrastructure issues 5 items and Curriculum content issues 5 items.

#### Scoring system:

Subjects' responses were graded on a three-point Likert Scale ranging from "0" to "1." "0" (disagree). "1" (neutral), and "1" (agree). The scores of the items have been added to each other and a sum divided up by the number of items. These results were then transformed into a percentile classification. Score of 60% or more means that obstacles occur and that while the results are less than 60%, barriers are absent in the implementation of e-learning systems.

#### Validity and Reliability of the study tools:

**Validity:** Three experts selected to test the content and validity of the instruments examined data collection instruments on their content validity. The panel was composed of an expert at critical, emergency, nursing, the University of Mansoura and two experts from Medical Surgical Nursing department, Faculty of Nursing, Benha University. Required changes have been made to achieve the final valid tool version.

**Reliability:** By using the Cronbach alpha coefficient method, the tools were tested for reliability. This became ( $\alpha = 0.58$ ) a tool on technological backgrounds; ( $\alpha = 0.87$ ) a tool for e-learning opportunities; ( $\alpha = 0.86$ ) a tool for the use of e-learning obstacles. This means that the study tools are highly reliable.

**Pilot Study:** After developing the instruments, a pilot study was conducted to test the clarity, applicability and time needed to complete the tool before starting actual data collection. The pilot study was performed in the main study sample on 10 percent of the sample ( $n = 24$ ) as no modifications to the tools were added.

**Fieldwork:** Two months from the first of July 2020 until the end of August 2020, data were collected. According to the available and their professional presence the questionnaire was distributed to all

study participants. All participants were asked to make one choice for statistical analysis only then given to the researchers.

#### ***Administrative and Ethical Consecrations***

The study was conducted with careful attention to ethical standards of research and rights of the participants to accept or refuse to contribute in this study and that their information will be treated with confidentiality and for the purpose of research. The respondents' anonymity was maintained as they weren't required to mention their names.

#### ***Statistical Analysis***

The data have been collected on a personal computer and tabulated. Statistical analyses were carried out with the Social Science Statistical Package (SPSS/version 20). The mean and standard deviation used for quantitative data, and the number and percentage qualitative data were expressed. The chi-square test was used for comparison. In order to determine the importance level, P-value was used. To test the reliability of the tool, Cronbach's Alpha test was used.

### **Results**

**Table 1:** Shows the demographic characteristics of the study subjects. As shown in the table, nearly equal percentage of nursing students was from the first to the fourth academic year (31.5%, 27.8%, 22.0% and 18.7%) respectively. Regarding gender, the highest percentage of nursing students (69.7%) were female and (58.5%) from a rural area.

**Table 2:** Shows the distribution of the students by their background on utilizing technology. As shown in the table, the facility of an internet at home and qualification in using computer and internet were represented in higher percentage in the fourth academic year as compared with the other three academic years from the fourth to the first (73.3%, 69.8%, 65.7% and 55.2%) and (73.3%, 71.7%, 64.2% and 55.2%) respectively. Regarding residence there was a highly statistically significant at

$p \leq 0.001$ , and the majority of students who have an internet at home facility and qualified in using computer and internet were from urban area as represented by (36.1% and 34.0%) respectively.

**Table 3:** presents the distribution of the students by their background on utilizing technology and revealed that, majority (47.3%, 51.8% & 45.6%) of the studied students utilized the U Tube application as a source of support to their skills on using technology for e-learning and considered it as the most effective application tool for e-learning in addition to Preferred using the mobile as a device for e-learning activities.

**Table 4:** Presents the distribution of the nursing students by their total perception regarding e-learning opportunities indicating that there were a highly statistically significant at  $p \leq 0.001$  and revealed that the majority of the nursing students had positive perception ranging from neutral (30.2%) to agree (46.0%) regarding e-learning opportunities items.

**Table 5:** Shows distribution of E-learning opportunities' items regarding effectiveness and motivation issues from the nursing students' perspective revealed that majority (51.0%) of the studied students indicated that e-learning course save time and place and gives facilities to manage time efficiently. Moreover, more than half of students (57.3%) indicated that e-learning encourages search for additional information on the topic of learning and they can ask any questions through e-learning.

**Table 6:** Shows distribution of E-learning barriers regarding learners and staff' characteristics issues from students' Perspective revealed that majority (64.7%) of the studied students indicated that Fear of the new tools for online learning Lack of typing skills were the main Barriers related to learners' characteristics issues. While, Lack of sufficient academic advisors online and insufficient knowledge and skill on

using e-learning were the main barriers related to academic staff' characteristics issues as presented by (48.5% and 56.8%) respectively.

**Table 7:** Shows distribution of E-learning barriers regarding technical problem, Infrastructure and curriculum content issues from students' Perspective revealed that majority (64.7%) of the studied students indicated that the slowness of network, system errors and lack of access to the e-learning platform were the main barriers related to technical problem issues. Regarding Infrastructure issues, the Lack of proper training before using e-learning platform, difficulty of rules and program directions and cost of internet fees/charges impede e-learning as presented by (64.7%) of the studied students .While, Delayed online submission than scheduled time and disproportion of e-learning with curriculum content of some courses were the main barriers related to curriculum content issues as presented by (52.7%) of the studied students.

**Table 8:** Presents the distribution of the nursing students by their total perception regarding e-learning barriers. Denoted the relation between the academic years of the studied subjects and barriers of e-learning as reported by the nursing students. As shown in the table, there were statistically significant differences at  $p \leq 0.001$ . Also, it was observed from the table that majority of nursing students of the three academic years from second to fourth academic years had neutral agreement with the presence e-learning barriers as presented by (58.3%, 33.9% and 66.7%) respectively. While, the first year students had the highest level of agreement with the presence e-learning barriers as indicated by half of them (50.0%).

**Table 1: Demographic characteristics of the study subjects (n= 241)**

| Demographic Characteristics | Nursing students (n=241) |      |
|-----------------------------|--------------------------|------|
|                             | No.                      | %    |
| <b>Academic years</b>       |                          |      |
| First year                  | 76                       | 31.5 |
| Second year                 | 67                       | 27.8 |
| Third year                  | 53                       | 22.0 |
| Fourth year                 | 45                       | 18.7 |
| <b>Mean ±SD</b>             | 2.2780±1.09995           |      |
| <b>Gender</b>               |                          |      |
| Male                        | 73                       | 30.3 |
| Female                      | 168                      | 69.7 |
| <b>Mean ±SD</b>             | 1.6971±.46047            |      |
| <b>Residence</b>            |                          |      |
| Rural                       | 141                      | 58.5 |
| Urban                       | 100                      | 41.5 |
| <b>Mean ±SD</b>             | 1.4149±.49374            |      |

**Table 2: Distribution of the students related their Background about utilizing technology (n= 241).**

| Background of Nursing Students on utilizing technology | Academic years       |         |                      |         |                      |         |                      |         | X <sup>2</sup>    | p-value | Residence |         |          |         | X <sup>2</sup>      | p-value |
|--|----------------------|---------|----------------------|---------|----------------------|---------|----------------------|---------|-------------------|---------|-----------|---------|----------|---------|---------------------|---------|
|  | 1 <sup>st</sup> year |         | 2 <sup>nd</sup> year |         | 3 <sup>rd</sup> year |         | 4 <sup>th</sup> year |         |                   |         | Rural     |         | Urban    |         |                     |         |
|  | Yes<br>%             | No<br>% | Yes<br>%             | No<br>% | Yes<br>%             | No<br>% | Yes<br>%             | No<br>% |                   |         | Yes<br>%  | No<br>% | Yes<br>% | No<br>% |                     |         |
| Is there an internet facility at home                  | 55.2                 | 44.8    | 65.7                 | 34.3    | 69.8                 | 30.2    | 73.3                 | 26.7    | 5.06 <sup>a</sup> | .167*   | 28.6      | 29.9    | 36.1     | 5.4     | 37.129 <sup>a</sup> | .000**  |
| Are you qualified in using computer and internet?      | 55.2                 | 44.8    | 64.2                 | 35.8    | 71.7                 | 28.3    | 73.3                 | 26.7    | 5.57 <sup>a</sup> | .134*   | 30.7      | 27.8    | 34.0     | 7.5     | 22.328 <sup>a</sup> | .000**  |

(\*) statistically significant at p&lt;0.05

(\*\*) highly statistically significant at p≤ 0.001

**Table 3: Distribution of the nursing students related their Background about utilizing technology (n= 241).**

| Background of Nursing Students on utilizing technology                                  | Academic years       |      |                      |      |                      |      |                      |      | Total |      | X <sup>2</sup>     | p- value |
|---|----------------------|------|----------------------|------|----------------------|------|----------------------|------|-------|------|--------------------|----------|
|   | 1 <sup>st</sup> year |      | 2 <sup>nd</sup> year |      | 3 <sup>rd</sup> year |      | 4 <sup>th</sup> year |      | No.   | %    |                    |          |
|   | No.                  | %.   | No.                  | %.   | No.                  | %    | No.                  | %    |       |      |                    |          |
| <b>Which application tool more effective for e- learning</b>                            |                      |      |                      |      |                      |      |                      |      |       |      |                    |          |
| Zoom  | 19                   | 25.0 | 16                   | 23.8 | 12                   | 22.6 | 19                   | 42.2 | 66    | 27.5 | 10.69 <sup>a</sup> | .098     |
| Whats app   | 13                   | 17.2 | 15                   | 22.3 | 10                   | 18.8 | 12                   | 26.7 | 50    | 20.7 |                    |          |
| U tube  | 44                   | 57.8 | 36                   | 53.9 | 31                   | 58.4 | 14                   | 31.1 | 125   | 51.8 |                    |          |
| <b>What is the source of support of your skills on using technology for e- learning</b> |                      |      |                      |      |                      |      |                      |      |       |      |                    |          |
| Video from University MIS   | 8                    | 10.5 | 7                    | 10.4 | 8                    | 15.0 | 7                    | 15.5 | 30    | 12.4 | 3.49 <sup>a</sup>  | .745     |
| Video From faculty IT   | 36                   | 47.3 | 27                   | 40.4 | 19                   | 35.8 | 15                   | 33.3 | 97    | 40.3 |                    |          |
| Video From U tube   | 32                   | 42.2 | 33                   | 49.2 | 26                   | 49.2 | 23                   | 51.2 | 114   | 47.3 |                    |          |
| <b>Preferred devices used for e-learning activities</b>                                 |                      |      |                      |      |                      |      |                      |      |       |      |                    |          |
| Computer  | 26                   | 34.3 | 16                   | 23.8 | 10                   | 18.8 | 4                    | 8.8  | 56    | 23.2 | 14.2 <sup>a</sup>  | .027*    |
| Laptop  | 15                   | 19.7 | 21                   | 31.4 | 20                   | 37.7 | 19                   | 42.4 | 75    | 31.2 |                    |          |
| Mobile  | 35                   | 46.0 | 30                   | 44.7 | 23                   | 43.5 | 22                   | 48.8 | 110   | 45.6 |                    |          |

(\*) statistically significant at p&lt;0.05

(\*\*) highly statistically significant at p≤ 0.001

**Table 4: Distribution of the nursing students according their total perception about e-learning opportunities (n= 241).**

| Academic years              | E-learning opportunities(Effectiveness & Motivation) |             |           |             |           |             | X <sup>2</sup>     | p- value |
|-----------------------------|--|-------------|-----------|-------------|-----------|-------------|--------------------|----------|
|                             | The total studied students no.(n=241)                |             |           |             |           |             |                    |          |
|                             | Agree  |             | Neutral   |             | Disagree  |             |                    |          |
| No.                         | %.   | No.         | %.        | No.         | %.        |             |                    |          |
| 1 <sup>st</sup> year (n=76) | 21   | 27.6        | 25        | 32.8        | 30        | 39.6        | 47.00 <sup>a</sup> | .000     |
| 2 <sup>nd</sup> year (n=67) | 26   | 38.8        | 28        | 41.7        | 13        | 19.5        |                    |          |
| 3 <sup>rd</sup> year (n=53) | 27   | 50.9        | 19        | 35.8        | 7         | 13.3        |                    |          |
| 4 <sup>th</sup> year (n=45) | 37   | 82.2        | 1         | 2.3         | 7         | 15.5        |                    |          |
| <b>Total</b>                | <b>111</b>   | <b>46.0</b> | <b>73</b> | <b>30.2</b> | <b>57</b> | <b>23.8</b> |                    |          |

(\*) statistically significant at p&lt;0.05

(\*\*) highly statistically significant at p≤ 0.001



**Table 5: Distribution of the nursing students related E-learning effectiveness and motivation issues (n=241).**

| E-learning opportunities   | The studied students(n=241) |             |           |             |           |             |
|--|-----------------------------|-------------|-----------|-------------|-----------|-------------|
|  | Agree                       |             | Neutral   |             | Disagree  |             |
|  | No.                         | %           | No.       | %           | No.       | %           |
| <b>E-learning Effectiveness</b>  |                             |             |           |             |           |             |
| E-Learning enhances learning efficiency  | 122                         | 50.6        | 72        | 29.9        | 47        | 19.5        |
| E-learning gives facilities to manage time efficiently.                              | 123                         | 51.0        | 72        | 29.9        | 46        | 19.1        |
| E-learning reduces students educational cost   | 70                          | 29.0        | 110       | 45.6        | 70        | 29.0        |
| E-learning course save time and place  | 123                         | 51.0        | 72        | 29.9        | 46        | 19.1        |
| E-learning allows access to educational material easily and at any time              | 96                          | 39.8        | 89        | 36.9        | 56        | 23.2        |
| E-learning helps on achieving the cognitive, skill and emotional aspects of students | 122                         | 50.6        | 73        | 30.3        | 46        | 19.1        |
| E-learning gives feedback for students to identify mistakes and learn from them      | 122                         | 50.6        | 73        | 30.3        | 46        | 19.1        |
| <b>Total</b>   | <b>91</b>                   | <b>37.8</b> | <b>65</b> | <b>27.0</b> | <b>85</b> | <b>35.3</b> |
| <b>E-learning Motivation</b>   |                             |             |           |             |           |             |
| E-learning is efficient as teaching method.  | 122                         | 50.6        | 72        | 29.9        | 47        | 19.5        |
| E-learning is better than face-to-face education in learning process.                | 122                         | 50.6        | 72        | 29.9        | 47        | 19.5        |
| E-Learning encourages search for additional information on the topic of learning     | 138                         | 57.3        | 103       | 42.7        | 0         | 0.0         |
| E-learning provides flexible interaction between teachers and students               | 120                         | 49.8        | 74        | 30.7        | 47        | 19.5        |
| Student can ask any questions through e-learning                                     | 138                         | 57.3        | 103       | 42.7        | 0         | 0.0         |
| <b>Total</b>   | <b>122</b>                  | <b>50.6</b> | <b>72</b> | <b>29.9</b> | <b>47</b> | <b>19.5</b> |

**Table 6: Distribution of nursing students and academic staff regarding E-learning barriers (n=241).**

| E-learning barriers  | The studied students(n=241) |             |            |             |           |             |
|--|-----------------------------|-------------|------------|-------------|-----------|-------------|
|  | Agree                       |             | Neutral    |             | Disagree  |             |
|  | No.                         | %           | No.        | %           | No.       | %           |
| <b>Barriers related to learners' characteristics issues</b>              |                             |             |            |             |           |             |
| Lack of sufficient knowledge on using e-learning.                        | 110                         | 45.6        | 131        | 45.6        | 0         | 0.0         |
| Lack confidence and shyness from online learning.                        | 155                         | 64.3        | 86         | 35.7        | 0         | 0.0         |
| Lack of typing skills for online learning                                | 156                         | 64.7        | 85         | 35.3        | 0         | 0.0         |
| Fear of the new tools for online learning                                | 156                         | 64.7        | 85         | 35.3        | 0         | 0.0         |
| <b>Total</b>   | <b>162</b>                  | <b>67.2</b> | <b>79</b>  | <b>32.8</b> | <b>0</b>  | <b>0.0</b>  |
| <b>Barriers related to academic staff' characteristics issues</b>        |                             |             |            |             |           |             |
| Lack of sufficient academic advisors online                              | 117                         | 48.5        | 95         | 39.4        | 29        | 12.0        |
| Instructors do not have sufficient knowledge and skill to use e-learning | 137                         | 56.8        | 59         | 24.5        | 45        | 18.7        |
| Lack of instructor ' confidence on using e-learning.                     | 68                          | 28.2        | 59         | 24.5        | 68        | 28.2        |
| Lack of clear instructions from academic staff                           | 99                          | 41.1        | 69         | 28.6        | 73        | 30.3        |
| Lack of timely feedback from instructor                                  | 99                          | 41.1        | 69         | 28.6        | 73        | 30.3        |
| Difficulty contacting with academic staff when at home                   | 99                          | 41.1        | 69         | 28.6        | 73        | 30.3        |
| <b>Total</b>   | <b>49</b>                   | <b>20.3</b> | <b>128</b> | <b>53.1</b> | <b>64</b> | <b>26.6</b> |

**Table 7: Distribution of nursing students about E-learning barriers items regarding technical problem, Infrastructure and curriculum content issues (n=241).**

| E-learning barriers   | The studied students(n=241) |             |            |             |            |             |
|---|-----------------------------|-------------|------------|-------------|------------|-------------|
|   | Agree                       |             | Neutral    |             | Disagree   |             |
|   | No.                         | %           | No.        | %           | No.        | %           |
| <b>Barriers related to technical problem issues</b>                       |                             |             |            |             |            |             |
| System errors and lack of access to the e-learning platform               | 156                         | 64.7        | 85         | 35.3        | 0          | 0.0         |
| The slowness of network   | 156                         | 64.7        | 85         | 35.3        | 0          | 0.0         |
| Lack of support services such as tutors                                   | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| Lack of technical assistance to handle technological problems             | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| E-learning system design is not flexible and difficult to use             | 156                         | 64.7        | 85         | 35.3        | 0          | 0.0         |
| <b>Total</b>  | <b>96</b>                   | <b>39.8</b> | <b>91</b>  | <b>37.8</b> | <b>54</b>  | <b>22.4</b> |
| <b>Barriers related to Infrastructure issues</b>                          |                             |             |            |             |            |             |
| Lack of devices to use for e-learning.                                    | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| Lack of consistent platforms, browsers, software                          | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| Lack of proper training before using e-learning platform                  | 156                         | 64.7        | 85         | 35.3        | 0          | 0.0         |
| The cost of internet fees/charges impede e-learning                       | 156                         | 64.7        | 85         | 35.3        | 0          | 0.0         |
| The rules and program directions in using online discussion are difficult | 156                         | 64.7        | 85         | 35.3        | 0          | 0.0         |
| <b>Total</b>  | <b>96</b>                   | <b>39.8</b> | <b>91</b>  | <b>37.8</b> | <b>54</b>  | <b>22.4</b> |
| <b>Barriers related to curriculum content issues</b>                      |                             |             |            |             |            |             |
| Disproportion of e-learning with curriculum content                       | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| Difficult to understand the contents of the subject through e-learning.   | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| Courses delayed in online submission than scheduled time                  | 0                           | 0.0         | 127        | 52.7        | 114        | 47.3        |
| <b>Total</b>  | <b>0</b>                    | <b>0.0</b>  | <b>127</b> | <b>52.7</b> | <b>114</b> | <b>47.3</b> |

**Table 8: Distribution of the nursing students regarding their total perception about e-learning Barriers (n= 241).**

| Academic years              | E-learning Barriers The total studied students no.(n=241) |             |            |             |           |             | X <sup>2</sup>     | p- value |
|-----------------------------|---|-------------|------------|-------------|-----------|-------------|--------------------|----------|
|                             | Agree   |             | Neutral    |             | Disagree  |             |                    |          |
|                             | No.   | %.          | No.        | %.          | No.       | %.          |                    |          |
| 1 <sup>st</sup> year (n=76) | 38  | 50.0        | 37         | 48.7        | 1         | 1.3         | 48.17 <sup>a</sup> | .000     |
| 2 <sup>nd</sup> year (n=67) | 22  | 32.8        | 39         | 58.3        | 6         | 8.9         |                    |          |
| 3 <sup>rd</sup> year (n=53) | 15  | 28.3        | 18         | 33.9        | 20        | 37.8        |                    |          |
| 4 <sup>th</sup> year (n=45) | 6   | 13.3        | 30         | 66.7        | 9         | 20.0        |                    |          |
| <b>Total</b>                | <b>81</b>   | <b>33.7</b> | <b>124</b> | <b>51.4</b> | <b>36</b> | <b>14.9</b> |                    |          |

(\*) statistically significant at p&lt;0.05

(\*\*) highly statistically significant at p≤ 0.0

## Discussion

An organization's success or failure to learn depends on several factors. This field of science makes it easier to provide the facilities necessary in the past to devise new scientific environments. Effective implementation, effective use, and positive effects for learners are therefore critical to evaluating e-learning systems (**Al-Fraihat, et al., 2020**). Therefore; the aim of the present study was to assess barriers and opportunities faced by nursing students during applying e-learning.

### Regarding Demographic characteristics of the studied students

Regarding gender, the highest percentage of nursing students were female and from a rural area. This is in line with **Aljawarneh, 2020**, whose study about "exploring innovative ubiquitous learning tools in higher education" and stated that more than three quarters of sample were females. This finding is also similar with **Mahalakshmi and Radha, 2020**, whose study about "A massive Exposure towards Web Based Learning ", who found that the majority of study subject were females.

Moreover, This finding is disagree with **Ostin and Wiley, 2020**, who reported in their study that About more than half of the participants were residents in a n urban areas. From the researcher's point of view, this may be due to females' interest in studying nursing more than males.

**As regard to Background of Nursing Students on utilizing technology**, The current study results revealed that, regarding residence there was a highly statistically significant at  $p \leq 0.001$  between students live in rural areas and students live in urban areas regarding presence of internet facility at home, and

the majority of students who have an internet at home facility and qualified in using computer and internet were from urban area. This finding is in accordance with **Ostin and Wiley, 2020**, who reported in their study that more than half of the participants were residents in a city. From the researcher's point of view, this is due to the availability of the Internet and its ease of access in urban area rather than rural area.

The current study results revealed that majority of the studied students utilized the U Tube application as a source of support to their skills on using technology for e-learning and considered it as the most effective application tool for e-learning. This finding has been supported by **Saxena, 2020**; in study about "Corona virus accelerates pace of digital education in India stated that the majority of students used U tube as a more effective application tool for e- learning.

This finding is incongruent with **Hong, et al., 2020**; who showed in their study about "Teaching Medicine Online during the COVID-19 Pandemic" stated that Zoom had the highest preference followed by Whats App, and Google classroom while Microsoft Teams, Edmodo, Skype, and Google Meet were moderately used in their online learning.

The current study results revealed that near half of students Preferred using the mobile as a device for e-learning activities. This finding goes in the same line with **Mulenga and Marbán, 2020**; who reported in his study about " Is COVID-19 the gateway for digital learning in mathematics education?" that the most popular device that students used to access the online materials was the smart phone followed by laptop, while the least used tool was the personal computer. From the

researcher's point of view, this is due to the availability and ease of use of mobile phones in online learning.

**As regard to e- learning opportunities:** The current study revealed that there were a highly statistically significant at  $p \leq 0.001$  and revealed that the majority of the nursing students had positive perception ranging from neutral to agree regarding e-learning opportunities items. This result agreed with **Mahmoud, et al., 2015**; who found that second and third years students had positive attitudes toward e-learning.

The current study revealed that majority of the studied students indicated that e-learning course save time and place and gives facilities to manage time efficiently. Moreover, more than half of students indicated that e-learning encourages search for additional information on the topic of learning and they can ask any questions through e-learning. This finding aligns with **Al-Samarraie, et al., 2018** who found that users' perceptions that e-learning was useful at enhancing their performance positively influenced their attitude towards e-learning. Also, **Mislinawati and Nurmasyitah, 2018**, shows that the students perceived the Web-based e-learning module to be beneficial in terms of increasing their comprehension, independence, self-discipline, motivation to learn, and interactions with one another and with the teacher.

The current study revealed that More than half of students show that e-learning is efficient as teaching method and e-learning is better than face-to-face education in learning process. This finding goes in the same line with **Radha, 2019**; who reported that the rapid advancement of communication and information technology has had an effect on the delivery and quality of education worldwide. Virtual classrooms and

instructors have largely replaced traditional classrooms in a number of university courses. The majority of students have embraced this novel method of instruction due to its adaptability, convenience, and low cost.

**As regard to E- learning Barriers:** The current study denoted the relation between the academic years of the studied subjects and barriers of e-learning as reported by the nursing students. There were statistically significant differences at  $p \leq 0.001$ . Also, it was observed that majority of nursing students of the three academic years from second to fourth academic years had neutral agreement with the presence e-learning barriers.

While, the first year students had the highest level of agreement with the presence e-learning barriers as indicated by half of them. From the researchers' point of view, the overall attitude of the third year students towards e-learning was positive because the faculty members in the Department of Obstetrics & Woman's Health Nursing use e-learning in teaching from previous years and they were the first to do the electronic courses system in their department. While the majority of first-year students have negative attitudes toward e-learning, this may be because they are new to college and have no prior experience with the Internet.

**As regard to barriers related to learners' characteristics issues:** The current study revealed that majority of the studied students indicated that Fear of the new tools for online learning Lack of typing skills were the main Barriers related to learners' characteristics issues. From the researchers' point of view; students need support to develop their skills to participate effectively in e-learning opportunities and students' previous experiences may affect their use of technology in their learning. This finding goes in accordance with **Aravanakumar, et al., 2019**; who reported in their study

about "Effectiveness of Video Assisted Learning Module" that the majority of students prefer to classroom learning environment rather than e-learning due to the presence of learners' characteristics issues. Additionally, **Mayerova and Rosicka, 2015**; reported that students with basic computer skills will be more engaged and motivated to use e-learning; on the other hand, students who lack basic computer skills will find it more difficult to engage because they must first learn how to use the application.

**As regard to barriers related to academic staff' characteristics issues:** The current study revealed that, Lack of sufficient academic advisors online and insufficient knowledge and skill on using e-learning were the main barriers related to academic staff' characteristics issues. This result is congruent with **Osman, et al., 2018** mentioned that instructors play a critical role in assisting students in achieving educational goals, and their active participation in the e-learning system through prompt response, motivation, support, suggestion, and assessment can significantly increase student satisfaction..

**As regard to barriers related to technical problem issues:** The current study revealed that near half of studied students agree with the presence of barriers related to technical problem issues and revealed that majority of the studied students indicated that the slowness of network, system errors and lack of access to the e-learning platform were the main barriers related to technical problem issues. This finding goes in accordance with the study performed by **Ali, et al., 2018** who reported that one of the main barriers to the use of e-learning is technical difficulties, such as a lack of technical support, inadequate and out-of-date computer systems, and connectivity problems.

**As regard to barriers related to infrastructure issues:** the current study

revealed that Regarding Infrastructure issues, the Lack of proper training before using e-learning platform, difficulty of rules and program directions and cost of internet fees/charges impede e-learning as presented by nearly two third of the studied students. These results consistent with the study conducted by UNESCO. **Universities, 2020**; who reported that the most common problems associated with online education in general included the availability of internet in provincial and rural areas, the speed and cost of internet, the availability of electronic devices to access the internet, and the lack of interaction between students and lecturers. This finding concurs with **Aljaraideh and Al Bataineh, 2019** who found that the major barriers students encounter are poor infrastructure. Also, **Al-Azawei, et al., 2016**; founded that most students agreed that low internet bandwidth is one of the issues hindering the successful application of e-learning in Iraq. In addition, **Ali, et al., 2018**; found that poverty and lack of ICT infrastructure are the main problems that have been identified as challenges of e-learning.

## Conclusions

Based on the findings of the current study, it concluded that:

The current study showed that the majority of the studied students were female and were living in rural area. Also There were a highly statistical significant difference between students live in rural areas and students live in urban areas regarding presence of internet facility at home and qualification in using computer and internet, more than half of students choose U tube application as the most effective tool for e- learning and preferred the use of mobile devices in e-learning activities. Additionally, more than half of students indicated that e-learning is an effective teaching method and that it is superior to face-to-face education in the learning

process. There was a highly statistically significant correlation between positive perceptions of e-learning opportunities and the majority of nursing students, ranging from neutral to agree. Majority of the three academic years' nursing students had neutral agreement with the presence of e-learning obstacles in the first year, students agreed with the presence of e-learning barriers in the highest possible level.

### Recommendations

Based on results of the present study the following recommendations can be suggested:

1. Enhance Internet speed and make Internet packages cheaper or even free.
2. Provide e-learning tools and computer skills training for students
3. Enhance educational methods in order to motivate students to learn and entice them to enroll in online courses.
4. Convert fundamental, critical, and medical surgical nursing courses to electronic formats similar to those used in the department of Obstetrics and Women's Health Nursing.
5. Address and overcome barriers and later improve the utilization of e-learning as an essential education tool rather than as an emergency.
6. Practicing medicine in surgical and gynecological laboratories using interactive tools such as videos and simulations is significantly more effective than reading text materials.

### Ethics Statement

The study was conducted with careful attention to ethical standards of research and rights of the participants to accept or refuse to contribute in this study and that their information will be treated with confidentiality and for the purpose of research. The respondents' anonymity was

maintained as they weren't required to mention their names.

### Credit authorship contribution statement

**Doaa Mohamed Mahmoud:** conceptualization, methodology, data curation, formal analysis & writing, **Nayera Mohamed Tantaewy:** conceptualization, review & editing, **Hend Mohamed Allam:** methodology, resources, data collection, writing& editing.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have, or could be perceived to have, influenced the work reported in this article.

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