Undergraduate Nursing Students' Readiness, Attitude, and Barriers Toward Blended Learning: Their Effect on Students' Satisfaction Following the COVID-19 Pandemic

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Abstract

Aim: The study aimed to examine the undergraduate nursing students' readiness, attitude, and barriers toward blended learning and their effect on their satisfaction following the COVID-19 pandemic. **Method: Design:** a descriptive correlational design. **Setting:** This study was conducted at the Faculty of Nursing, Menoufia University at Shebin El-Kom City. **Sample:** A simple random sample of 380 nursing students from the previously mentioned setting. **Tools: (**I) nursing students' readiness with blended learning questionnaire; (II) students' attitude toward blended learning; (III) barriers that affect the adaption of blended learning; (IV) nursing students' satisfaction toward blended learning. **Results:** A moderate level of readiness was exhibited by about two thirds (62.4%) of the individuals. Most of them (88.9%) had a highly positive attitude toward blended learning. Following the COVID-19 pandemic, blended learning was deemed satisfactory by 40.3% of students. "I don't have enough experience with technology" was the most often cited barrier among the participants (96.1%). There was a highly positive significant correlation between total student readiness, total positive attitude, and their satisfaction. Additionally, the total satisfaction level and the total barriers had a slight, non-significant negative connection. **Conclusion**: Despite the highly students' positive attitude, and readiness toward blended learning, less than half of the sample was satisfied with blended learning. Moreover, there was a positive correlation between total readiness and a total positive attitude from one side and satisfaction total score from the other side. Conversely, there was a weak inverse relationship between overall barriers and satisfaction total score. **Recommendations**: University authorities should facilitate the application of free training programs for both faculty and students on the importance of blended learning, computers and mobile applications, and different e-learning platform tools to increase their technical skills and use it effectively.

Keywords: Attitude, Barriers, Blended Learning, COVID-19 Pandemic, Readiness, Satisfaction, Undergraduate.

Introduction

Nursing students have faced challenges with their learning and development throughout the COVID-19 pandemic (Judd and Dalton, 2021). The desire to limit physical contact between teachers and pupils to protect them from the pandemic is what spurred the push for blended learning as a teaching approach (Peter and Phu, 2020). According to recent definitions, blended learning is an alternate style of instruction created to carry on the teaching and learning activities swiftly and dependably in times of emergency or disaster (Hodges et al., 2020). Students have had to relocate from traditional college campuses and acclimate to new online learning environments due to the COVID-19 pandemic's disruption (Veletsianos & Houlden, 2019).

Students' readiness and attitude towards blended learning greatly determine the success of its implementation. Research has shown that a positive attitude towards technology and a readiness to engage with digital and blended learning environments can significantly increase the effectiveness of the learning process (Attaran & Zainuddin, 2018). In a broad sense, the term "learner readiness" refers to a learner's capacity to gain information and take the initiative to modify their behavior to achieve successful and efficient learning outcomes (Copple et al., 1993), as cited in Chorrojprasert, 2020.

Low emotional or physical maturity, as well as challenging personal situations, can hinder a student's readiness to study. It may indicate personal obstacles or outside distractions (Caldwell et al., 2021). On the other hand, well-prepared students are better equipped to handle a variety of situations, including unexpected changes in the learning model (Tang & Chaw, 2013). Therefore, it is necessary to first assess the student's readiness

before putting a learning model into practice, then competence and needs (Adams et al., 2020).

Although the application of blended learning at universities during and after the COVID-19 pandemic was urgent, many barriers can block its progress and dissemination. Some of the major obstacles are the incompetence of the teaching personnel, the lack of time, and inadequate financial and technical support from the workplace administration (Johnson et al., 2016). Additionally, for blended learning to be implemented successfully, it needs a lot of work, the right attitude, an adequate budget, and highly motivated teachers and students (Othman et al., 2022). Moreover, blended learning may be impacted by numerous external problems, including inadequate technical assistance, a shortage of hardware and software, and a lack of acknowledgment of the use of online instruction (Coleman & Mtshazi, 2017).

According to Yukselturk & Yildirim (2008), higher education institutions use student satisfaction as a key metric to assess the caliber of online programs in the current market. According to Kuo et al., (2013), student satisfaction refers to how students view the worth of a course and their involvement in the educational program. The concept of satisfaction relates to developing an emotional attitude toward a system. A person who is more satisfied with the system is more inclined to remain in it (Kornpitack & Sawmong, 2022). So, students' readiness, attitude, and barriers can affect the outcome of the learning process, or, on another word, it can affect their levels of educational achievement and their level of satisfaction.

Significance of the study

Global nursing education has been significantly impacted by the COVID-19 pandemic. Starting remote online teaching and learning activities posed a significant challenge to Egypt's nursing academics. Thus, universities must review their curricula to be prepared for any crises that may arise because of the COVID-19 pandemic. The university education system needed to be immediately changed to guarantee the continuation of the educational process. As a result, it is necessary to assess the degree of preparedness and the level of satisfaction among nursing faculty members and students with blended learning, as well as pinpoint any obstacles that might prevent its adoption. After that, nursing academics will be prepared for any pandemic scenarios in the future and can carry on with their teaching-learning activities without interfering with the academic structure. So, this study was conducted to assess the undergraduate nursing students' readiness, attitude, and barriers toward blended learning and its effect on their satisfaction following the COVID-19 pandemic.

The aim of the study

The study aimed to examine undergraduate nursing students' readiness, attitude, and barriers toward blended learning and their effect on students' level of satisfaction following the COVID-19 pandemic.

Objectives:

- To identify the level of nursing students' readiness toward blended learning following the COVID-19 pandemic.
- To assess the level of nursing students' attitudes toward blended learning following the COVID-19 pandemic.
- To determine barriers that might affect blended learning following the COVID-19 pandemic as reported by the participants.
- To detect or assess the level of nursing students' satisfaction with blended learning following the COVID-19 pandemic.
- To investigate correlation between undergraduate nursing students' readiness, attitude, barriers toward blended learning and their level of satisfaction following the COVID-19 pandemic.

Research questions:

1. What is the level of nursing students' readiness toward blended learning following the COVID-19 pandemic?
2. What is the level of nursing students' attitudes toward blended learning following the COVID-19 pandemic?
3. What are the barriers that might affect blended learning following the COVID-19 pandemic as reported by the participants?
4. What is the level of nursing students' satisfaction with blended learning following the COVID-19 pandemic?

5. Is there correlation between undergraduate nursing students' readiness, attitude, barriers toward blended learning and their level of satisfaction following the COVID-19 pandemic?

Operational definitions:

Readiness : willingness or a state of being prepared for blended learning by nursing students

Attitude: a feeling or opinion of students about blended learning, and a way of behaving that is caused by this**.**

Barriers: Anything serving to obstruct, or prevent students access, or progress. that limits the quality or achievement of learning through blended methods**.**

Satisfaction: a pleasant or comfortable feeling that students get when they receive teaching they wanted, or when they have done something they wanted to do.

MATERIALS AND METHODS

Research Design: To perform the study, a descriptive correlational research design was used.

Study setting: This study was conducted at the Faculty of Nursing, Menoufia University at Shebin El-Kom City.

Subjects: A simple random sample of 380 nursing students was drained from the above-mentioned setting during the academic year 2021/22. It was calculated using the following site: https://calcweb.com/sample_size_calculator. They were in 3rd, 4th, and internship years, had taken blended learning courses, and agreed to participate in the study.

Data collection tools

Four distinct tools were used to collect the data:

Tool one: Student readiness questionnaire regarding blended learning: It has two parts:

Part I: socio-demographic data, which consisted of questions covering participants' basic demographic data, such as age, gender, and educational level. Additionally, questions addressed their experience with nursing tele education, including questions related to electronic device usage proficiency, type and quality of internet used, type of electronic device ownership, and availability of advanced technology.

Part II: Student readiness questionnaire regarding blended learning. This questionnaire was used to assess student readiness concerning blended learning. It was developed by **Osman & Hamzah (2017)**. It consisted of 10 statements constructed to assess student readiness for blended learning. Each statement is rated from 1 to 5, with 1 indicating strongly disagree, 2 indicating disagree, 3 indicating not sure, 4 indicating agree, and 5 indicating strongly agree.

Scoring system: The participants were asked to indicate whether they agreed or disagreed with each statement by using a 5-point Likert scale. The total score of the questionnaire ranged from 10 to 50. Since this score was also transformed into a percentage, 100% was the maximum percentage that could be obtained. The participants' responses were graded to 3 levels of readiness: low for less than or equal to 60%, moderate range from more than 60% to less than 75%, and high level of readiness ≥75%.

Tool two: Student attitude questionnaire toward blended learning: This tool was created by **Aladwan et al. (2018)**. It was employed to evaluate students' attitudes toward blended learning. The questionnaire had 34 statements in total. It was divided into three categories, which are: statements from 1-13 were used to determine student attitudes toward blended learning; statements from 14-23 were used to determine the negative attitudes and impressions of students toward blended learning; and statements from 24-34 were related to the definition of students' understanding and ideas about mixed learning. The participants were asked to indicate whether they agreed or disagreed with the statements using a yes-or-no answer, in which 1 indicates "no" and 2 indicates "yes."

Scoring system: Since this score was also transformed to a percentage, 100% was the maximum percentage that could be obtained. The participants' responses were graded to 2 levels of attitude (low or high); low attitude for ≤ 34. while high attitude for more than 34.

Tool three: Barrier's questionnaire that Affects the Adaption of Blended Learning: This tool consisted of 9 items that reflect factors that negatively affect blended learning implementation. It was created using literature as well as an earlier instrument **(Moukali, 2012)** that identified the primary obstacles faculty members would face while implementing

blended learning. The researchers deleted and changed a few elements from the tool to make it more appropriate for identifying the obstacles that would prevent students from adopting blended learning. The participants were asked to indicate whether they agreed or disagreed with the statements by using a yes-or-no answer, in which "1" indicates "no" and "2" indicates "yes."

Scoring system: Since this score was also transformed to a percentage, 100% was the maximum percentage that could be obtained. The participants' responses were graded into 2 levels: students face low barriers for ≤ 9, and students face high barriers >9, respectively.

Tool four: Student Satisfaction Questionnaire with Blended Learning

The creators of this questionnaire are **Tayyib et al., 2020**. It was designed to investigate how students were satisfied with blended learning. It had 35 statements total, with 28 of them positively framed and 7 statements using a negative framing using a five-point Likert scale. The questionnaire was separated into five domains: technology (6 items), management (3 items), interaction (9 items), instruction (12 items), and instructor (5 items). The participants were asked to indicate whether they agreed or disagreed with the statements by using a 5-point Likert scale that goes from "strongly disagree" (scoring 1) to "strongly agree" (scoring 5) for positive statements and the opposite for negative statements.

Scoring system: The total score ranged from (63-147), and a total score of each dimension is calculated. The total satisfaction score is the sum of the scores of all the dimensions. Score less than or equal to 60%, more than 60% to less than 75%, and more than 75% pointed to dissatisfaction, neutral, and satisfy, respectively.

Validity and reliability of the tools:

Reliability: The internal consistency of each tool's items was measured using Cronbach's alpha coefficient, which was used to assess the four instruments' reliability. The overall Cronbach's alpha of the student attitude tool was .94, and (α = 0.78) was for the student readiness tool, (α = 0.78) was for the barriers tool, and (α = 0.78) was for the student satisfaction tool. The tools were considered reliable.

Validity: Five experts in the related field (Nursing Administration and Family and Community Health Nursing) reviewed the data collection tools for content validity after they had been translated into Arabic. The instruments are deemed valid from their viewpoints.

Pilot Study: A pilot study for the tools was conducted on 10% of the subjects that were included in the study. Based on the results of the pilot study, no modifications were made to the tools.

Ethical Considerations: The Research and Ethics Committees at the Faculty of Nursing, Menoufia University, approved the proposed study to be carried out (approval no. 795). Each student received an explanation of the purpose and scope of the study. The researchers emphasized that participation in the study was completely voluntary and that individuals might leave at any time without facing any consequences. Participants have to fill out a consent form in order to take part. By using coding, data anonymity and confidentiality were guaranteed.

Field Work: An official approval letter was submitted to the Dean of the Nursing College to start collecting data. The letter included the title and purpose of the study. After the informed consent was obtained from the participants to participate in the study, the researchers explained the purpose and content of the tool to the students. The data was gathered over eight months, from October 2022 to June 2023. Data was gathered via direct distribution of written copies and online questionnaires on Google Forms. The researchers requested that students complete the tool and return it anonymously by the end of the same day, or at the latest, the following day for written copies. The researchers were available for any clarifications.

Data Analysis:

The information was gathered and entered a personal computer. With SPSS/V 20, statistical analysis was carried out. The statistical information was presented as Mean & Standard Deviation (X±SD). Numbers and percentages were used to express qualitative data. Pearson's correlation test was used to measure the relationship between students' readiness, attitude, and barriers toward blended learning and students' satisfaction.

Results:

Table (1): depicts the socio-demographic characteristics of the participants. It finds that (46.7%) of the sample under investigation was in the third degree, and (57.1%) of the sample had a mean age of 22 ± 0.75 years, between 21 and 22 years of age. In terms of gender, the percentages for the two genders were equal.

Table (2) shows the state of the educational technology tools that the participants in the study were using during the COVID-19 pandemic. Most of the studied students said that they are proficient with a wide range of electronic devices (73.9%), that they use a 3G internet connection with an acceptable level of internet quality (41.8%, 53.7%), that they can access the internet using their smartphones (51.6%), were support fourth-generation internet services (4g) (39.7%), which primarily used for social media and email during the pandemic (80.8%), and that they rely heavily on lectures for their education (47.9%).

Fig. 1 describes the readiness levels of undergraduate nursing students for blended learning due to the COVID-19 pandemic. About (62.4%) of the students showed a moderate degree of preparation, while (37.6%) showed a poor level. The second research question in the current study, " What is the level of the undergraduate nursing students' readiness toward blended learning following the COVID-19 pandemic?" is addressed by this finding.

Fig. 2 shows the undergraduate nursing Students' attitude toward blended learning. As the chart illustrates, just 37.6% of the students in the study had a high negative attitude toward blended learning, compared to most of them (88.9%) had a high positive attitude. In general, more than half of them (52.1%) have a high attitude level.

Table (3) presents barriers that affect the adoption of blended learning as perceived by the participants. The data indicated that the rank of the mentioned barrier among the participants from highest to lowest percentages was as follows: don't have enough experience with technology (96.1%), the internet is not available on my campus (88.2%), blended learning reduces my contact with my friends (87.6%), I don't have the internet at home (85%), the computers are not available on my campus (84.7%), blended learning increases my study workload (79.5%), I don't have computers at home (75.3%), and my friends don't like blended learning (72.1%).

Table (4) demonstrates the undergraduate nursing students' satisfaction with blended learning following the COVID-19 pandemic. Following the COVID-19 pandemic, 40.3% of nursing students reported feeling satisfied with blended learning, compared to just 29.5% felt unsatisfied. In terms of subdomains, a high percentage of nursing students expressed satisfaction with the instructor and management domains (50.5 and 52.1%, respectively).

Table (5) & fig. (3) highlight the Pearson correlation between the total score of student readiness, total positive attitude, total negative attitude, and total attitude among studied nurses and total satisfaction level. Among studied student nurses, there was a high positive significant correlation between total student readiness and total positive attitude from one side and total satisfaction level from the other side ($r = 0.33$, $p < 0.0001$ & $r = 0.41$, $p<0.0001$). Furthermore, the table highlighted a negative significant correlation between the total student satisfaction level and total attitude ($r = - 0.44$, $p<0.0001$). Additionally, there was a weak, non-significant negative relationship between satisfaction level and total barriers among studied students ($r = - 0.17$ & $p < 0.004$).

Table (1): The distribution of the undergraduate nursing students based on their sociodemographic attributes (n = 380)

Socio-demographic attributes	No.	%
Age (Years)		
21–22 Years	217	57.1
23–24 Years	163	42.9
Mean ± SD	22 ± 0.75 years	
Gender:		
Male	190	50
Female	190	50
Educational Level		
3rd year	178	46.8
4th year	98	25.8
Internship	104	27.4
Total	380	100

Table 2: Status of educational technology tools used during the COVID-19 pandemic among studied nursing students (n=380).

Educational technology tools used during the COVID-19 pandemic	No.	%
Q1: Level of proficiency in using various electronic devices:		
Inadequate	31	8.2
Acceptable	45	11.8
Good	281	73.9
Very Good	23	6.1
Q2: Type of internet services available:		
ADSL	91	23.9
3G	159	41.8
4 G	89	23.5
More than one type	41	10.8
Q3: Quality of internet services:		
Acceptable	204	53.7
Good	161	42.4
Very good	15	3.9
Q4: Which of the following items do you personally own and utilize in your nursing education?		
Personal computer	121	31.8
Tablet	63	16.6
Smartphone	196	51.6
Q5: Do your device support any of the following technologies?		
Augmented reality	58	15.3
High-definition phone camera	149	39.2
Fourth-generation internet services (4g)	151	39.7
More than one technology	22	5.8
Q6Your education depends upon:		
Lectures (University)	182	47.9
Private education centers	103	27.1
Self-study	58	15.3
More than one method	37	9.7
Q7Main use of the internet during COVID-19 pandemic		
Nursing education and E-learning	58	15.3
Social media and E-mail	307	80.8
Tele – working	15	3.9
Total	**380**	**100**

Fig. 1: Level of undergraduate nursing students' readiness toward blended learning due to the COVID-19 pandemic (n=380)

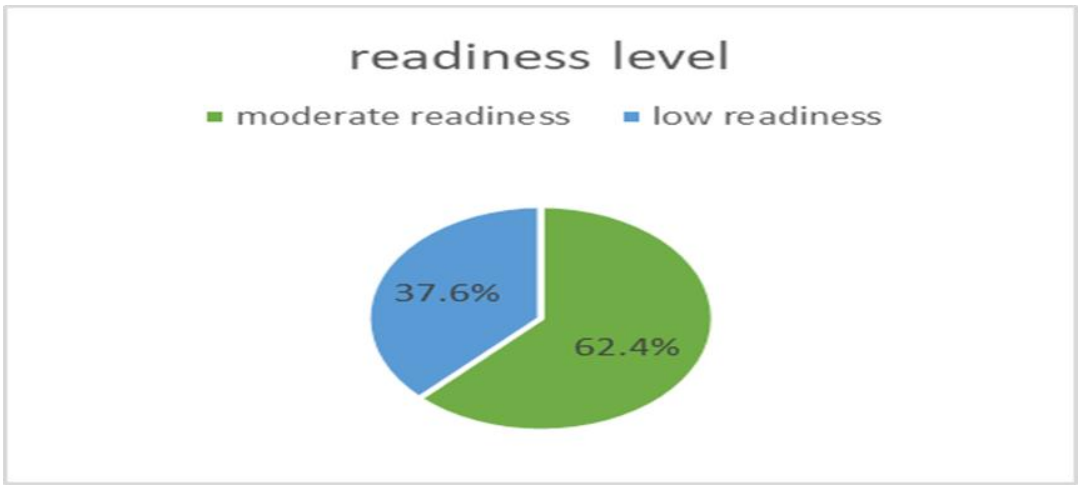


Fig. 2: The undergraduate nursing Students' attitude toward blended learning (n= 380)

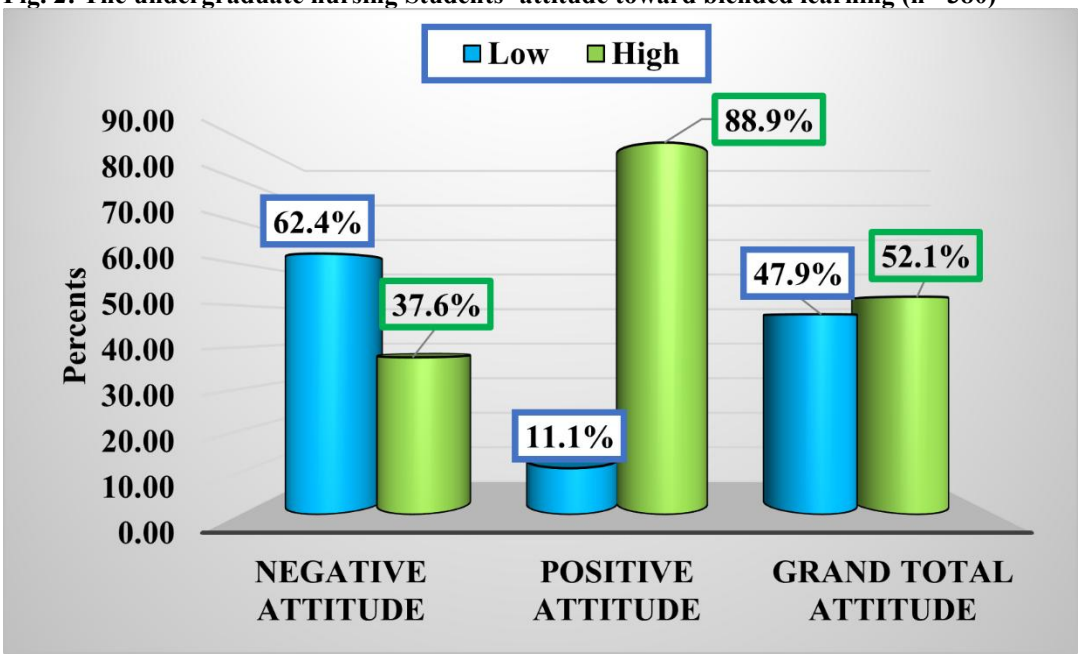


Table 3: Barriers that Affect the Adoption of Blended Learning as perceived by undergraduate nursing Students (n= 380)

Barriers as perceived by undergraduate nursing Students	Yes		No	
	no.	%	no.	%
1. I don't have internet at home	323	85	57	15
2. I don't have computers at home	286	75.3	94	24.7
3. Blended learning increases my study workload	302	79.5	78	20.5
4. My friends don't like blended learning	274	72.1	106	27.9
5. I don't have enough technology experience	365	96.1	15	3.9
6. I don't have enough technical support	335	88.2	45	11.8
7. Blended learning reduces my contact with my friends	333	87.6	47	12.4
8. The Internet is not available on my campus	335	88.2	45	11.8
9. The computers are not available on my campus	322	84.7	58	15.3

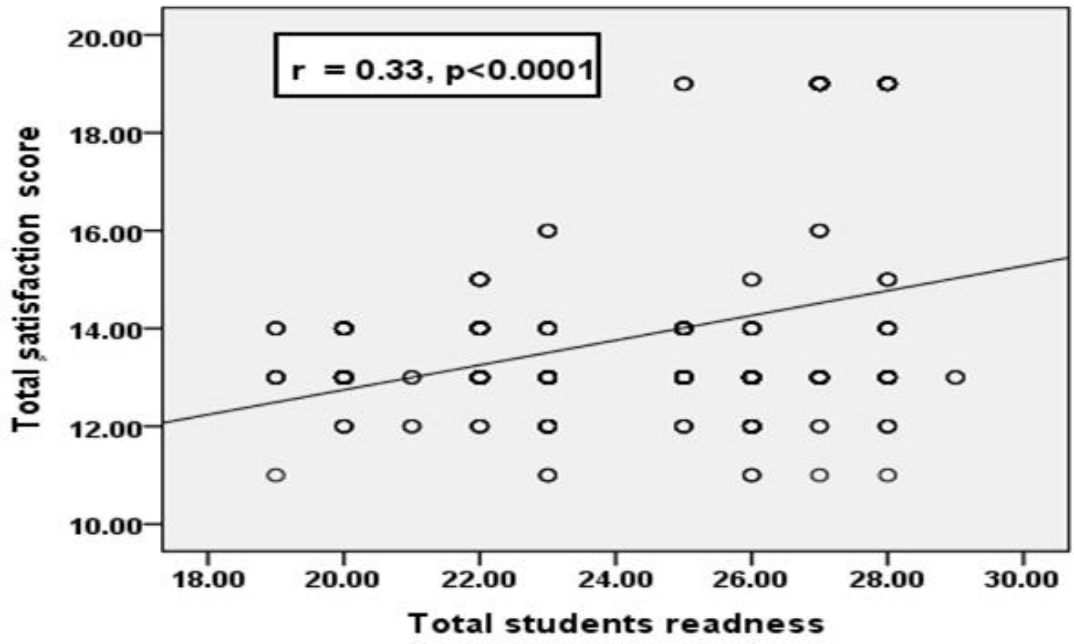
Table 4: Undergraduate Nursing Students' Satisfaction with Bended Learning following the COVID-19 Pandemic (n = 380)

Satisfaction Subdomains	Satisfy		Neutral		Dissatisfy	
	N0.	%	N0.	%	N0.	%
Interaction (9 items)	**150**	**39.5**	**100**	**26.3**	**130**	**34.2**
Instruction (12 items)	**141**	**37.1**	**159**	**41.8**	**80**	**21.1**
Instructor (5 items)	**192**	**50.5**	**88**	**23.2**	**100**	**26.3**
Management (3 items)	**198**	**52.1**	**100**	**26.3**	**82**	**21.6**
Technology (6 items)	**148**	**38.9**	**82**	**21.6**	**150**	**39.5**
Grand total satisfaction (35 items)	**153**	**40.3**	**115**	**30.3**	**112**	**29.5**

Table 5: Pearson correlation between total score of students' readiness, total barriers, total positive attitude, total negative attitude, and total grand attitude among studied nurses, and grand total satisfaction (N = 380)

Variables	Grand total satisfaction	
	R	P
Total students' readiness	0.33	<0.0001
Total Barriers	- 0.17	<0.004
Total positive Attitude	0.41	<0.0001
Total negative attitude	- 0.42	<0.0001
Total grand Attitude	- 0.44	<0.0001

Fig.3: Correlation between total score of nursing student's readiness, and their total satisfaction score with regression line (N=380).



Discussion:

The incredible advancements in information and communication technologies have made the world seem like a little town. Universities all across the world are moving toward blended learning, which uses technology to supplement and improve traditional face-to-face instruction **(Moukali, 2012)**. Especially considering the COVID-19 pandemic, blended learning is a significant way that information and communication technology is being used in the education process. Thus, this study aimed to examine undergraduate nursing students' readiness, attitude, and barriers toward blended learning and their effect on students' level of satisfaction following the COVID-19 pandemic.

Most students reported that their main use of the internet during the COVID-19 pandemic was social media and e-mail. This is true, as through this period there was no contact with other people except through social media to update news and information about COVID-19. Additionally, e-mail in this period was used to exchange information and orders about work, as work during this time was online and from home. As well, more than half of the studied students used smartphones in their nursing education. This aligns with the research findings of **Othman et al. (2022)** and **Alsoufi et al. (2020)**, in which most of their studied students owned smartphones. These results were similar because now almost youth have smartphones and to contact others through social media.

Most of the studied students in the current study reported a good level of proficiency in using various electronics devices, and the majority stated that they had a decent internet connection and could access fourth-generation internet services. Interestingly, students were able to participate and engage in the new learning environment by applying their newly gained technological abilities in other uses, such as social media. This goes in the same line with **Alsoufi et al. (2020)**, who revealed the same results. This might be due to most of the studied students being twenty, and during this age, they have different technical skills as chatting, surfing the internet, and using different social media. Additionally, they studied computer subjects during their high school years and in the first year of college.

Learners need to be prepared for blended learning to deliver effective e-learning experiences **(Keskin & Yurdugül, 2020)**. Within this current research, approximately more than two-thirds of the undergraduate nursing students had a moderate readiness level

toward blended learning following the time of the COVID-19 pandemic. In the same vein, the study conducted by **Abbacan-Tuguic (2021)** whose results showed a moderate level of students' readiness to implement blended learning. This similarity in the result of the current study and Abbacan-Tuguic study may be because, One of the most important requirements for reducing the amount of physical contact between teachers and students in order to protect them from the global pandemic is the shift from traditional to blended learning.

This is opposite to several studies. Firstly, the study conducted by **Özbay et al. (2022)** indicated that even though students had positive thoughts about online learning, they were not prepared to quit traditional teaching techniques and valued face-to-face learning in general. Moreover, the study conducted by **Banji et al. (2021)** who revealed that while more than one-third of participants had previously used e-learning platforms before the COVID-19 pandemic, and most of them had basic computer skills before the pandemic, more than half of the studied students lacked the necessary study background to be ready for the use of e-learning platforms. As well, **Kahyaoğlu and Küçükkaya (2016)** illustrated that the majority of nursing students said that they didn't like learning remotely.

Regarding students' attitudes toward blended learning, most of the studied students (88.9%) had a highly positive attitude towards blended learning. This result may have happened because of the pandemic of COVID - 19. The Ministry of Health obliges the universities to obey instructions to lessen the infection's spread and to decrease physical contact with each other. Consequently, universities turned to adopting blended learning to complete the curriculum and not to suspend the program.

Similarly, **Atashinsadaf et al., 2024; Othman et al., 2022; Abbacan-Tuguic, 2021; and Aladwan et al., 2018** have the same results. Additionally, in the same line, a study done by **Taghizadehand & hajhosseini (2020)** reported that the majority of students exhibited favorable attitudes towards blended learning technology, asserting that learning in blended classes is more effective than in traditional methods of teaching. All these similar results might be due to the desire of students to protect themselves and their families from the risk of infection brought by going out to university. So, they had a positive attitude regarding blended learning which enabled them to learn at their homes without having to go out.

While the current result is opposite to the result of **El-kholy & El-boudy (2022)**, who stated that during the COVID-19 pandemic, Menoufia University's nursing students had an unfavorable attitude toward using the e-learning system to finish their curricula. This difference may be due to the different time and method of assessing students' attitude.

Regarding barriers toward blended learning, the highest percentage of students reported that they don't have enough technological experience, which is believed to be a barrier to using blended learning. Moreover, most students reported that they don't have enough technology support, and the internet and computers are not available on their campus are other barriers to blended learning with an equal percentage.

This result is supported by the result of **Fiel (2020)**, who examines knowledge, attitude, barriers, motivation, and adaptation of blended learning. The majority, according to the data, had less blended learning experience. The outcomes also demonstrated that, despite students' lack of access to computers, blended learning conveniently benefits them. Additionally, **Abbacan-Tuguic, (2021)** reported that inadequate infrastructure and limited technological accessibility may make BL integration less successful.

The fact that blended learning is a novel experience for both students and faculty members, requiring more training to use its platform more effectively and more funding to equip the faculty with the required tools and a robust network, makes the similarities between the current study's results and the previously mentioned studies logical.

On the other hand, the most studied sample reported that blended learning reduces their contact with their friends, which is considered another barrier to adopting blended learning. Because many lectures are given online in response to instructions from the Ministry of Health to decrease physical contact and lessen crowdies. Thus, they are deprived of face-to-face contact with their friends. This

may be contradictory to the study conducted by **Ja'ashan (2015)** who mentioned that blended learning provides diffident students with an opportunity to engage and express their views with their peers through forums or other alternative methods on Blackboard.

The variance in the results of the current study and the previously mentioned studies can be resulted from differences in personality among different studies' groups, as some students prefer to go to faculty to interact with and make a relationship with their colleagues and prefer face-to-face lectures, which are full of interaction between students and teachers, while shy students will prefer online contact

Students' satisfaction, as measured by their degree of enjoyment and the effectiveness of their educational experience, is the primary indicator of the quality of blended learning **(Naji et al., 2012)**. Fortunately, slightly less than half of the studied students were satisfied with blended e-learning following the time of COVID-19 pandemic, and approximately one third of them were dissatisfied with it. Concerning subdomains, slightly half of them showed satisfied responses regarding instruction and management domains. This can be rationale by the fact that most nursing education is practical and requires demonstration, interaction, and face-to-face contact rather than e-learning.

It was also noted by other research that offering all nursing courses online was not the best option. In a practice-focused field like nursing, distance learning can lead to serious deficiencies, especially in clinical and laboratory settings **(Kahyaoğlu & Küçükkaya 2016; Tasocak et al., 2014)**. Plus, the high cost of the internet, unavailability, or weakness of the network in many regions in Egypt, and technical problems that may happen during online sessions or offline may be barriers to many students that reduce students' satisfaction with e-learning education. Consequently, they might stop utilizing online learning platforms.

There are many studies' findings that align with the present study. As the results of **Ja'ashan (2015)** demonstrated that students were enjoying blended learning since it improved their abilities and allowed them to make learning engaging, interactive, and collaborative. Additionally, according to **Li et al., (2021)** more than one-third of students and more than two-thirds of teachers expressed satisfaction with the online learning environment. On the other hand, the findings were opposite with **Othman et al. (2022**), whose research indicated that over ninety percent of the students examined were not satisfied with blended learning. The differences in results may be due to the differences in the student population and in the field of education.

There was a strong positive and significant association between total readiness and total positive attitude from one side and the total satisfaction level among studied nurses from the other side. However, there is a significant association between total grand attitude and the satisfaction total score regarding blended learning. This can be justified by the fact that positive attitudes make people more flexible and prepared to adopt blended learning. So, students will be motivated to attend e-learning and have a positive attitude toward blended learning and be satisfied if the faculty have good preparations like adequate infrastructure, computers, well-trained faculty members and students, a well-prepared platform, plans for solving any technological problems that may be happening, and students motivated to access e-learning **(Firdaus et al., 2020)**.

This outcome was consistent with that of **Giannousi et al., (2010)**, who found a substantial positive link between students' attitudes toward blended learning in general and their reported level of e-learner satisfaction. However, this conclusion does not align with the findings of **Othman et al., (2022)**. The results of their study showed that among the sample under study, there was a non-significant weak negative link between the attitude total score and the satisfaction total score regarding blended learning.

Moreover, there was a non-significant negative weak link between total barriers score and satisfaction total score regarding blended learning in the present study. From the researchers' point of view, even though the presence of many barriers that may hinder the application of blended learning, the students are satisfied to proceed with blended learning to complete their graduation and not be late.

Conclusion:

Even though a large portion of the sample had a positive attitude and were prepared for blended learning, fewer than half expressed satisfaction with it. Sadly, a number of barriers that participants identified could prevent blended learning from becoming widely used. The following are some of these obstacles: "BL decreases contact with their friends, they don't have internet and computers at home, and they lack technological experience and support." Additionally, there was a positive correlation found between the overall satisfaction score and the total readiness and positive attitude from one side. On the other hand, there was a somewhat negative correlation between the total satisfaction score and the overall barriers.

Recommendations:

The study recommended the following:

- University authorities should facilitate the application of free training programs for both faculty and students on the importance of blended learning, computers and mobile applications, and different e-learning platform tools to increase their technical skills and use it effectively.
- To improve student happiness and preparation for blended learning, university administrators should evaluate the needs of students and their level of readiness before introducing the program in any kind of educational setting.
- There should be a technical support committee that should be available 24 hours a day to assist faculty and students in solving any emergency technical problems that could happen in implementing e-learning.
- Increase the number of blended learning courses offered by the faculty that may help in changing the attitude of students towards blended learning.
- It is recommended to conduct further studies to investigate the effect of the transition from face-to-face learning to blended learning on the level of students' academic success and its effect on long-run students' cheating.
- Another study is to investigate the effect of different measures to improve students' satisfaction with blended learning.

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