

## **Nursing Students' Perceptions of E-Learning Challenges During COVID-19: A Cross-Sectional Survey**

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### **Abstract:**

Due to COVID-19 exposures globally, all institutions have begun providing education using remote learning to prevent functional standstill and promote continuity in learning. During the COVID-19 epidemic, bachelor of nursing students was asked to describe the challenges they faced in their clinical job, education, performance, online tests, and psychological health and cooperation. A closed-ended pre-validated online questionnaire was issued to all undergraduate nursing students at our university. Categorical variables were analyzed using a Chi-square, and multiple regression analysis was adopted for comparing student's e-learning domains. This cross-sectional study included 322 nursing undergraduates (N = 322). Students' biggest concerns included exam criteria (77.3%), pre-clinical training (61.6%), management support (69.8%), difficulty understanding online lectures (48.9%), technology barriers (71.8%), and fear about course completion (73.96%). Female nursing students were more likely than male students to report that COVID-19 hurt their mental health (stress about online learning) ( $p = 0.031$ ). COVID-19 had a considerably more detrimental effect on senior students' perceptions of teamwork than did COVID-19 have on junior students ( $p = 0.004$ ). More study is needed from developing countries to define standards for delivering excellent education in the event of a pandemic, which creates an unprecedented situation that necessitates using a remote e-learning system.

**Keywords:** e-learning, final year nursing students, challenges, barriers of e-learning, technical support, instructor support, education, psychology, nursing students.

### **1. Introduction**

In December 2019, the beginning of COVID-19 in Wuhan impacted human life in several contexts, including education [1]. When a situation due to an unprecedented pandemic occurs, all educational institutions have reached a limited option of preserving their learning goals. A Shift occurred from traditional to online by following synchronous and asynchronous training methods [2]. Healthcare students have well adopted promising features of synchronized strategies [3]. The worldwide mandatory shift made technologies significant in supporting the learning process. Since the last two decades, e-learning technological advancement has made several fields of education revamp the structure and system in establishing productivity in education [4].

Studies have been conducted to see how a pandemic of unprecedented proportions might affect nursing students. In a few studies in developed countries, nursing students appreciated online Blackboard learning systems and emphasized the importance and necessity of considering challenges in ongoing clinical training [5, 6].

Incorporating linkages and feedback loops into technology applications have been proven to increase student engagement by facilitating access, interactivity, and learner control [7], improving student performance and course satisfaction [8]. Furthermore, it has been proposed that students would be more engaged if e-learning content focused on higher-order abilities like creative thinking and problem-solving [9]. Another study aimed to persuade institutions to adopt easily accessible e-learning technologies to achieve a satisfactory result [10]. These findings supported the value of interactive learning processes, an excellent educational foundation, and approaches for creating interactive online content. However, most of the participants from the research stated that they lack practical training and are afraid about their final year internship training, especially during pandemic situations [11]. A few studies explored students coping strategies and mental stress during COVID-19 clinical exposure [12, 13].

Nursing students from developing countries face tremendous challenges with technology, management support, and different socio-economic background. There is a lack of scientific conclusions on many issues that nursing students encounter due to COVID-19 from a developing country. As a result, the researchers aimed to explore the challenges faced by nursing students during the present pandemic. We also looked at how the COVID-19 epidemic affected students' psychological health, educational elements, and course performance. Hence adequate data need to be gathered among the nursing students from a developing country to precisely determine the barriers and challenges faced during online learning. Challenges could be interaction, technology, management, teacher's efficiency, stress related to exams and grades, and overall satisfaction.

## **2. Methods**

### **2.1. Study Design and Participants**

A descriptive cross-sectional online survey was performed using a convenience sampling technique among nursing students of a department in southern India (SreeSakthiMayeil Institute of Nursing and Research). All male and female students between the first and fourth years were included in this cross-sectional survey. The questionnaire was created on Google Forms and shared with nursing students via common communication app groups for all four years. The administration section of the department provided access to the students' groups. Raosoft's online sample size calculator indicated a minimum sample size of 322, with a 95% level of confidence and a margin of error of 5%. The research took place over three months, from March to May 2021. Also, due to the current situation, we recruited 312 undergraduate nursing students.

### **2.2. Data Collection Tool**

The data collection tool was prepared using the previous researchers' study on e-learning tools [14, 15], which had been implied for content validity and face validity by nursing expertise on administration and education. The questionnaire was constructed after several articles were reviewed and extensive discussions were held with experts from the nursing field. The instrument had two main sections. The first section had information about demographic data, gender, year of study, and origin. The second instrument had 21 items of closed-ended questions to explore nursing students' retrospective remote learning course experiences and challenges during a pandemic in interaction, technology, teachers, and perception during online learning, categorized as four significant domains.

Ten questions were assigned to interaction domain (score 1-50), four to technology domain (score 1-20), three to instructor domain (score 1-15), three perception domains (Score 1-15), and one item for management domain (score 1-5). All positive statements scores ranged from Strongly agree 5 to agree 1, and the negative statement score was vice versa. The total score of the responses ranges from 1 to 105. The tool was tested by a pilot study among 10% (32 nursing students), and the results were not included in our principal analysis. The score of the tool's reliability was 0.78 on our pilot study.

### **2.3. Procedure**

The management supported the nursing faculty to distribute the tool (link created by google document), using the department email and familiar WhatsApp app communications. The instrument was sent to nursing students at different levels of their studies (First to the fourth year). They were given the freedom to opt-out of the study at any time. They were not forced to fill up the questionnaire. Besides, they were not guided to choose their responses as they perceived their challenges during online learning.

### **2.4. Ethical Approval**

The research ethics committee of the management of the College of Nursing, SreeSakthiMayeil Institute of Nursing and Research, gave its approval to the study. After learning about the study's goal and specifics, the participants were asked to provide their informed consent. Participation was specified as optional, and there were no negative

consequences for refusing to participate or withdrawing from the study. The participants were guaranteed that their personal information would be kept private and secure. The Declaration of Helsinki's ethical principles were observed during the study's implementation.

**2.5. Statistical Analysis**

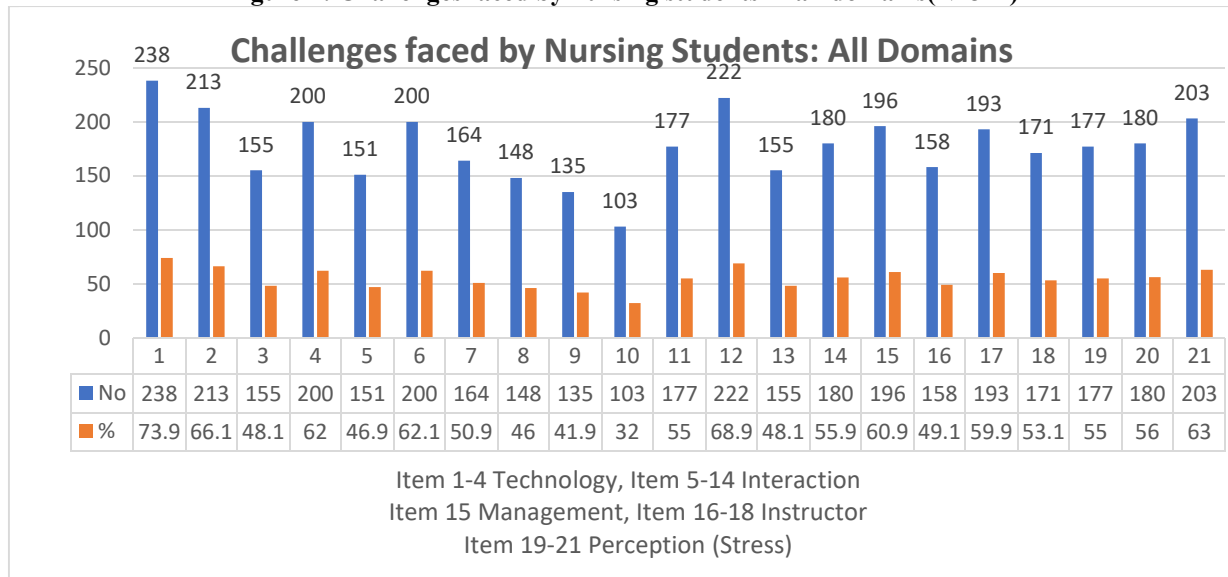
Data were analyzed using IBM SPSS statistics, version 22. The descriptive statistics of frequencies and proportions were adopted. Univariate and multivariate analysis of variance (Wilks' Lambda) was adopted to associate male and female, lower and higher-level students. Lower level is described as first, second, and third-year students. Higher-level depicts fourth-year nursing students. The statistically significant value was fixed at a p less than 0.05.

**3. Results**

It was agreed that 332 undergraduate nursing students were willing to participate in the survey. Compared to the males, females comprised the vast majority of the class (83%). (17 percent). There was a general concern regarding hospital training (54.1%) and the number of pre-requisites to meet in unexpected scenarios when students were not at the hospital (58.3%). In addition, 83.9% had difficulties connecting their network to online sessions. Among the challenges from their clinical training, most participants (66.9%) stated that e-learning could never replace direct patient care practices.

Furthermore, examination obstacles were the most common factor (57%), followed by internet issues during formative assessments—table 1. The most prevalent educational challenges were difficulties understanding online lectures (64.4%) and lack of interaction between faculty members and students (40.2%). 86.9% cited a shortage of electronic facilities within appropriate networks due to poor finances. Among the performance challenges, most students (80.1%) were concerned about losing their grades and becoming ill due to difficulties connecting to the online services (42%). The most prevalent perceived online assessment obstacle was exam criteria (87.6%), followed by technology-based practical problems (86.6%). Figure 1 depicts a thorough representation of the challenges faced by bachelor of nursing students during the COVID-19 pandemic.

**Figure 1: Challenges faced by nursing students in all domains (N=322)**



A comparison of male and female, senior and junior level students is shown in Figure 2 and Figure 3.

**Figure 2 Different Domains Mean Female Students**

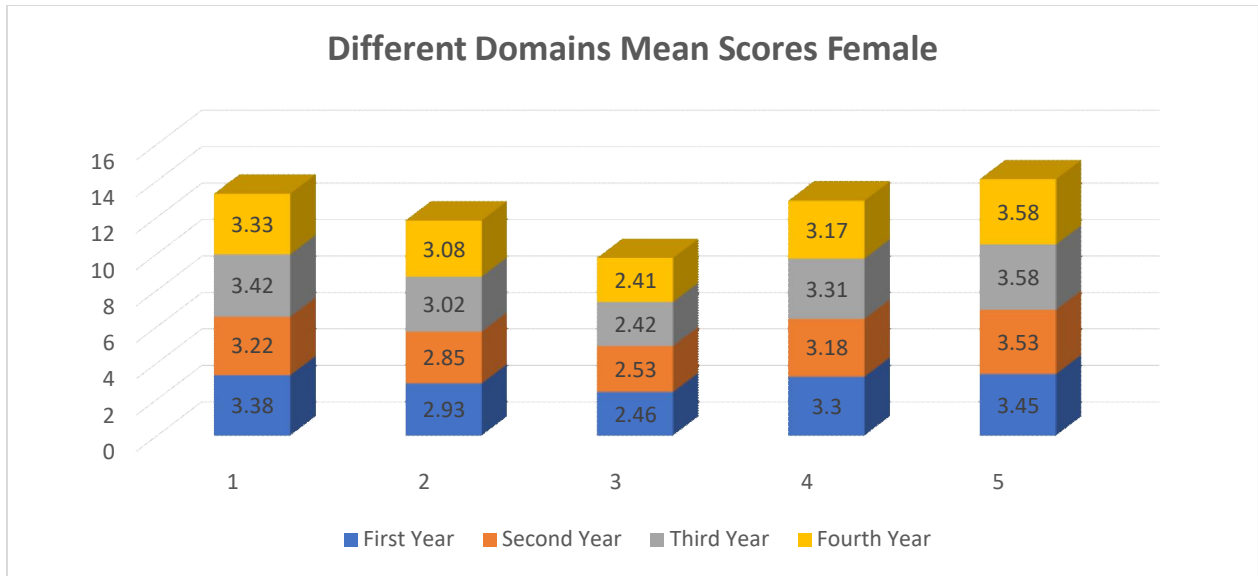
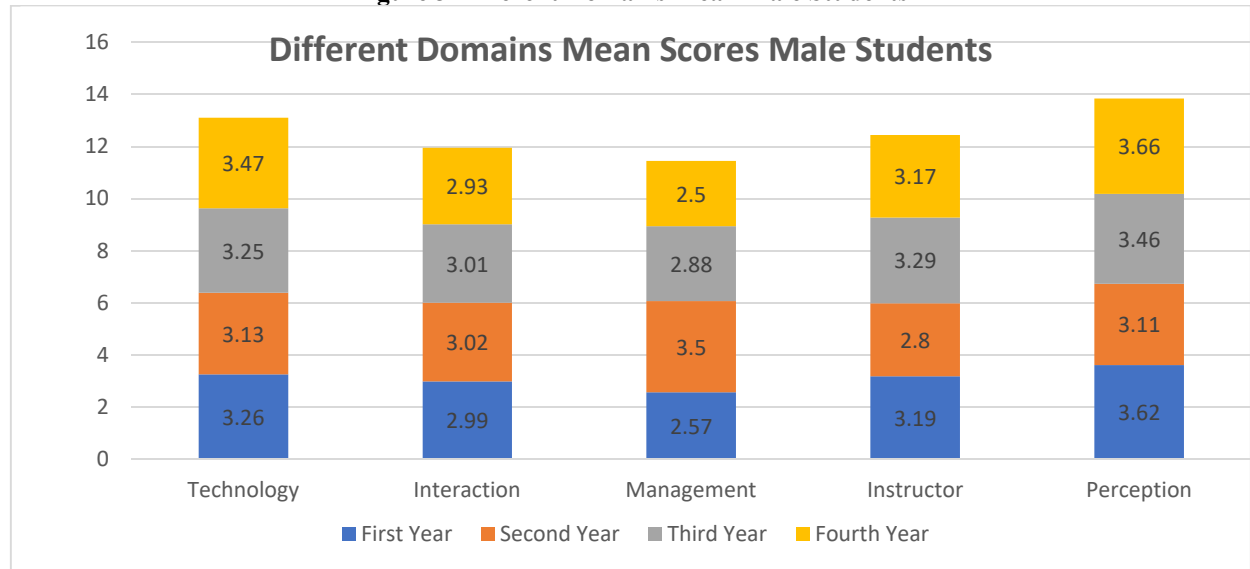


Figure 3 Different Domains Mean Male Students



Tables 1 & 2 compare junior and senior students' perspectives on the different domains of challenges. Senior students reported considerably more obstacles than junior students in terms of barriers in having hospital training ( $p < 0.047$ ), instructor support ( $p < 0.024$ ), new criteria in interaction during online about different learning objectives ( $p > 0.05$ ), and adopting new technology by the management support ( $p > 0.05$ ). Although more older students recognized these problems, there was no significant difference ( $p > 0.05$ ) between senior and junior students regarding educational hurdles about interaction and management support. Fear of online sessions, grades, completion of the course ( $p = 0.200$ ), and fear of technical issues during electronic devices access ( $p = 0.509$ ) were all reported as performance challenges by more senior students. Female students (72.1%) reported more outstanding technical issues/poor internet connections as an online test obstacle than male students (27.9%). A significant difference was found among male and female students regarding management support ( $p = 0.012$ ).

Table 1 Challenges differences between senior and junior nursing students

Challenges	Seniors N %	Juniors N %	P-value
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Clinical related challenges	65(20.19)	257(79.81)	<0.047 *
Educational related challenges	87(27.02)	235(72.98)	< 0.024 *
Performance-related challenges (Interaction)	103(31.99)	219(68.01)	0.582
Management support	104(32.30)	218(67.70)	0.540

\*P<0.05 Statistically significant

**Table 2 Gender and Year of Study: Differences of challenges of e-learning (Univariate ANOVA)**

Challenges E-Learning Domains	Variables	Type III SS	Mean Sq.	F	Prob.
Technology	Gender	2.579	2.579	0.600	0.439
	Year of Study	18.047	6.016	1.400	0.243
	Gender*Year of Study	9.977	3.326	0.774	0.509
Interaction	Gender	1.319	1.319	0.064	0.801
	Year of Study	17.984	5.995	0.290	0.832
	Gender*Year of Study	60.507	20.169	0.977	0.404
Management	Gender	6.816	6.816	6.408	0.012
	Year of Study	8.539	2.846	2.676	0.047
	Gender*Year of Study	5.834	1.945	1.828	0.142
Instructor	Gender	6.244	6.244	3.073	0.081
	Year of Study	19.342	6.447	3.172	0.024
	Gender*Year of Study	8.191	2.730	1.343	0.260
Perception	Gender	1.831	1.831	0.373	0.542
	Year of Study	18.641	6.214	1.266	0.286
	Gender*Year of Study	22.927	7.642	1.557	0.200

Legend: P-value<0.05 Significant; P-value>0.05 Non-significant

THE multivariate ANOVA result shows no significant difference of opinion between genders or between the various levels of studies (Table 3).

**Table 3 Gender and Year of Study: Differences of challenges of e-learning (Multivariate ANOVA)**

Effect	Wilks Lambda	Df	Error Df	F	Prob.
Gender	0.970	5	320	2.005	0.078
Year of Study	0.949	15	884	1.133	0.321
Gender*Year of Study	0.941	15	884	1.310	0.189

**Legend:** P value <0.05 Significant; P value >0.05 Non-significant

COVID-19 had a significant impact on the majority of student's academic achievement (75.4%), teamwork (72.2%), educational elements (interaction) (67.5%), and psychological health (perception) (67.5%). A comparison of the impact of COVID-19 on male and female students and junior and senior students was also conducted. The effects of COVID-19 on psychological health were indicated by a substantially higher proportion of female students (61.1%) than male students (38.9%). The impacts of COVID-19 on teamwork were perceived by significantly more senior students (71.6%) than junior students (28.4%).

#### 4. Discussion

Due to the unexpected closure of all educational institutions due to the pandemic, the educational sector sought other methods to minimize the disruption to routine teaching and learning activities induced by the lockdown. The approach of academic institutions using e-learning came forward as a better way to deal with the challenge. Students were required to complete their study utilizing e-learning methodologies in the health care field institution[14]. There

has been a dramatic transition in educational practices due to the rapid advancement of technology as well as the increasing globalization of higher education, which has resulted in the elimination of boundaries between students [16]. According to the most recent data, there hasn't been a pandemic of this magnitude since the Spanish Influenza [17]. In this regard, nursing educational institutes have also been badly impacted [18], resulting in a slew of issues for nursing students, wreaking havoc on their education [19], performance, teamwork, and mental health [20]. Many students choose nursing as a career option, but because of the nature of nursing careers involving aerosols and personal protective equipment, nursing professionals are more susceptible to COVID-19 infection [21]. Most of our participants from senior and junior level nursing students in our project claimed that they struggled during a quick move from transitional to e-learning owing to a pandemic condition. The COVID-19 pandemic is problematic due to its novelty, high virus dissemination rate, and psychological impacts [18,19]. As a result, several countries have implemented various measures using different technologies to combat the disease's spread and impact. The current study has 84.4% females and 15.6% males, which mirrors the gender distribution of students enrolled in our institute's nursing undergraduate program. 63.04% (203) of these students said the number of requirements to pass the course is a significant obstacle, and 55.9% (180) said a lack of self-motivation amid-covid-19 is a severe challenge. Also, students expressed that they lack general motivation 68.02% (219) undergoing unique learning methods of e-learning. This discovery is in line with a recent study by Sheroun et al., who found working during the pandemic difficult for nursing students [22]. There were no significant differences in responses to pre-clinical tasks between male and female students in this study.

On the other hand, senior students were more influenced by these difficulties than junior pupils. Similar findings were recently reported by Ali et al., who indicated in their study that nursing students were significantly affected during the COVID-19 epidemic, and those senior nursing students were found to be more stressed than junior dental students. However, the statistical association was not significant [23]. This is because senior students work in clinics, and their course requirements are based on compulsory hospital training. On the other hand, the junior students work in the simulation lab at the campus to complete their non-patient-dependent course requirements.

The difficulty in understanding and satisfaction of attending online lectures 48.13% (155) was the most common educational issue mentioned by nursing students, followed by the lack of faculty-student contact during online courses 40.07% (129). Poor voice or video quality and the lecturer's incapacity to communicate with students throughout the online lecture may have contributed to the discovery, which are evident disadvantages of online learning [2]. Furthermore, nursing students said that comprehending the online courses was a huge issue. A study by Amir et al. found that students had trouble understanding online lectures since it was challenging to concentrate longer [10].

Overall, 54.96% (177) of students said they feared losing grades regarding problems linked to their performance. According to prior studies, students indicated concerns about completing their learning outcomes and a fear of losing qualities due to online learning changes during the COVID-19 pandemic [24]. In this study, Final year female students, 54.9% said they were afraid of becoming infected by their patients during internship training. This may be related to women having a higher prevalence of stress, worry, and anxiety than men [25]. In our study, older students were substantially more affected ( $p < 0.05$ ) than younger students in terms of becoming infected with COVID-19, which could be because senior students work in the nursing field and are aware of the virus's transmission mechanisms droplets. As a result, they are more apprehensive about contracting an infection.

The most prevalent examination issue was stated to be the criteria of the online exam 62.11% (200), followed by a poor internet connection 51.87% (167). This study's findings support those of a previous survey conducted by Mukasa et al. in 2021, which found that students were more stressed about online tests because they were concerned about the length of time and the possibility of encountering technological issues [18]. According to recent research from Ireland, one out of every six students at a higher education institution had challenges with broadband connectivity that could hinder their learning [26].

In this context, educational institutions should identify, reach out to, and support students dealing with this problem. Most of our participants, 60.86% (196), agreed that the Institution provides all supporting online library material for their references. Moreover, senior students found online exams more difficult than junior students. These findings could be explained by students' fear of completing the course with online exams and losing their grades [27]. The covid-19 pandemic culminated a great challenge to all educational institutions due to its distinctive phases in its novelty, transmissibility, and more impact on mental health [28,29]. Consequently, worldwide preventive measures have been initiated to curb the spread of COVID-19 infections. A few organizations have followed a blended learning method of learning students.

Simultaneously, nursing educational institutions have also been impacted extensively, driving them to several barriers in reaching learning goals in formative and summative evaluation criteria, grades attainment, technology

knowledge and accessibility, and mental stress [30]. Nursing as a profession requires mandatory clinical training to minimize the gap between theory and practice. Even for all nursing expertise, the concern about filling the gap between theory and hospital training still exists [31]. During COVID-19, the gap gradually has widened, and the institutions have put effort into compensating simulation lab practice and clinical training and preparing students to be eligible for entering into their internship [32]. A similar study by Nahla et al. agrees with our investigation, which concluded that the nursing students found a significant challenge during COVID-19 [33]. However, senior students were more disturbed by these challenges than junior students as they feared their internship training. The results are consistent with study findings by Kim et al., who reported that prelicensure students were more benefitted and gained confidence using realistic simulation training during the COVID-19 pandemic [34]. This can be ascribed to the reality that the final year students acquire necessary skills in the clinics and their course internship requirements are dependent on the acquaintance of clinical training with actual patients.

The finding can be validated with a study conducted by Amir et al., which reported that the nursing students gained profound psychological satisfaction with high and medium fidelity manikin to minimize the gap between theory and practice [35].

In terms of the study's limitations, it only includes a bachelor of nursing students from one Indian Institute of Nursing. Other institutes' perspectives could aid in establishing a clear picture of the COVID-19 pandemic's pressures as felt by nursing students. Additionally, a limited number of questions were used to measure the perceptions about e-learning during COVID-19.

## **5. Conclusion**

The COVID-19 pandemic presents several issues for nursing institutions that must be addressed to create a productive learning environment for their students. An emergency like COVID-19 necessitates the development of e-learning systems that can help nursing students improve their clinical skills, knowledge, and attitudes shortly to overcome the existing challenges. There will be new prospects for nurses in the future if the nursing fraternity adopts a hybrid approach to teaching and learning.

## **Declaration of Competing Interest**

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