Original Research Article

Exploring the issues and trends in online teaching during the COVID-19 pandemic among nursing students at selected colleges

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ABSTRACT

Background: The COVID-19 pandemic precipitated an unprecedented shift from conventional classroom learning to digital pedagogy, profoundly influencing nursing education. Understanding nursing students' perceptions of issues and evolving trends in online teaching is critical for strengthening digital learning ecosystems. This study aimed to explore the issues encountered and the emerging trends perceived by nursing students regarding online teaching during the COVID-19 pandemic.
Methods: A descriptive analytical study was conducted among 665 nursing students from selected colleges in Chennai using a structured Google Form. Data were collected through a validated Likert-scale questionnaire encompassing demographic factors, issues, and trends in online education. Descriptive statistics summarized the distribution of responses, while chi-square tests assessed associations between variables.
Results: Students reported substantial challenges, including poor home learning environments, reduced concentration, limited peer interaction, technical disruptions, and significant eye strain. Internet instability emerged as the most prominent issue (39.8% strongly agreed). Despite these barriers, students acknowledged positive educational transformations, notably increased flexible learning formats, micro-modules, advanced digital tools, and blended-learning prospects. Significant associations were noted between issues/trends and variables such as age, year of study, course type, gadget used, and internet source.
Conclusions: Findings illustrate a dual landscape wherein nursing students experience critical barriers yet recognize promising technological and pedagogical advancements. Strengthening digital infrastructure, enhancing e-pedagogy, and institutionalizing blended learning models are essential for future-ready nursing education.

Keywords: Academic resilience. Digital equity, Pandemic-driven learning, E-learning dynamics, Digital pedagogy, Nursing informatics, Remote education trends, Technological adaptation

INTRODUCTION

The COVID-19 pandemic brought about an unprecedented disruption to global education systems, forcing a rapid transition from traditional classroom environments to online teaching modalities. This sudden shift created significant opportunities and challenges for learners, educators, and institutions across all disciplines. Nursing education, which relies heavily on interactive teaching, hands-on clinical practice, and skill-based learning, was particularly impacted by the migration to virtual platforms.[1-3]

Online teaching became the primary mode of instruction during lockdowns, compelling nursing students to adapt to digital tools, remote communication, and technology-dependent learning environments.[4] Although online education offers flexibility, accessibility, and innovative learning resources, its abrupt implementation during the pandemic raised considerable concerns regarding instructional quality, student engagement, and the digital divide.[5,6] Several studies have reported that nursing students faced difficulties related to poor home learning environments, lack of concentration, inadequate interaction with educators, increased academic stress, and inconsistent internet connectivity.[7-9] Technical disruptions, digital fatigue, and reduced opportunities for collaborative learning further complicated their educational experience during remote learning periods.[10] At the same time, the crisis accelerated integration of advanced digital technologies such as video-based teaching, virtual simulations, blended learning, and flexible training models that students perceived as promising trends for the future of nursing education.[11-13]

In India, the shift to online platforms was particularly challenging due to disparities in internet access, socioeconomic constraints, and varying levels of digital literacy among students.[13,14] Nursing students, many of whom rely on mobile data and smartphones, encountered technological barriers that hindered participation and academic performance.

Yet, despite these challenges, emerging evidence suggests that students also appreciated the convenience, modular content, and evolving e-learning innovations introduced during the pandemic.[15-18] Given these contrasting experiences, understanding nursing students' perceptions of both issues and trends in online teaching is essential for strengthening digital learning frameworks, enhancing academic support, and designing sustainable blended-learning models post-pandemic.

Therefore, this study aimed to explore the issues encountered and the emerging trends perceived by nursing students in selected colleges during the COVID-19 pandemic. The findings are intended to guide educators, administrators, and policymakers in improving the quality, equity, and effectiveness of future online nursing education.

METHODS

Research design

A quantitative research approach and cross-sectional survey design were adopted for this study. The study focused on identifying and analyzing the issues and trends in online teaching among nursing students. The research variables included the issues and trends related to online teaching, along with selected demographic variables. This design was appropriate as it enabled the researcher to collect data from a large group of participants at a single point in time and assess their perceptions systematically in period of January to February 2022.

Research setting

The study was conducted in selected Nursing Colleges in Chennai. Owing to pandemic restrictions and the online nature of the topic, all data collection activities were carried out through digital platforms. The colleges granted formal ethical permission before the commencement of the study. The online mode of data collection ensured ease of participation and safety for students during the COVID-19 pandemic.

Criteria of the study participants

A total of 665 nursing students participated in the study, selected through a non-probability purposive sampling technique to ensure inclusion of individuals with relevant experience in online teaching learning during the COVID-19 pandemic.

Inclusion criteria

Participants were eligible if they were enrolled in selected nursing colleges in Chennai, had attended online classes during the pandemic period, and voluntarily provided informed online consent. This sampling approach ensured that the study captured accurate perceptions from students who were directly exposed to digital learning environments during the crisis.

Exclusion criteria

Students were excluded if they were not enrolled in the selected nursing colleges in Chennai, had not participated in online classes during the pandemic period, were on academic leave during the study period, or declined to provide informed online consent. Additionally, incomplete or improperly filled responses were excluded from the final analysis to ensure data quality and reliability.

Characteristics of the study participants

As indicated in the original document, the study participants represented diverse demographic and academic backgrounds, including various age groups predominantly between 17 and 20 years, and students from

both urban and rural areas. The sample comprised learners enrolled in different nursing programs, with the majority pursuing B.Sc. Nursing and representation from all academic years, ensuring comprehensive insights across levels of training. Most participants relied on mobile devices and mobile internet as their primary means of accessing online classes, reflecting the technological realities of nursing students during the pandemic. The overall sample size was sufficiently large and diverse to provide a robust understanding of students' perceptions, attitudes, and challenges related to online teaching in the COVID-19 context.

Data collection tool and procedure

Data were collected using a structured Google Form that comprised demographic variables such as age, residence, family income, year of study, type of gadget used, and source of internet, along with a 5-point Likert-scale questionnaire designed to assess various issues and trends in online teaching, with response options ranging from strongly disagree to strongly agree. Participants completed the questionnaire within 5-10 minutes using their mobile phones or other digital devices, and the online format enhanced accessibility, uniformity, and efficiency in data retrieval. Prior to data collection, ethical permission was obtained from the Principals of the selected colleges, and the survey link was disseminated through institutional communication channels. Students were instructed to read each item carefully and provide honest responses, with voluntary participation and confidentiality assured throughout the process. Ultimately, all 665 responses were successfully recorded online, and the digital method facilitated consistent administration of the tool to a large group of students during the COVID-19 pandemic.

Reliability and validity of the tool

The study utilized a structured Likert-scale questionnaire that was developed based on an extensive review of relevant literature and aligned with the specific objectives of the research. To ensure the quality of the instrument, the questionnaire items were reviewed and validated by subject experts who assessed their relevance, clarity, and appropriateness in capturing issues and trends related to online teaching. Both face validity and content validity were established prior to administration, strengthening the tool's credibility and suitability for data collection. Given that the survey was administered online, the clarity, straightforwardness, and standardization of the instrument were especially critical to ensure consistent understanding and reliable responses from all participants.

Statistical analysis

The data analysis plan, as outlined in the original document, involved the use of both descriptive and inferential statistical methods to interpret the findings meaningfully. Descriptive statistics, including frequency and percentage distribution, were employed to summarize

the demographic characteristics of the participants and to assess the overall levels of issues and trends in online teaching among nursing students. To examine relationships between these variables, inferential statistics were applied using the Chi-square test (X^2), which helped determine associations between issues or trends in online teaching and selected demographic variables. The analysis revealed statistically significant associations with factors such as year of study, source of internet, age, course of study, and the gadgets used for online learning, leading to the rejection of the null hypothesis and acceptance of the research hypothesis. Overall, the analytical approach aligned effectively with the study objectives and provided meaningful insights into students' experiences and perceptions regarding online teaching during the COVID-19 pandemic.

RESULTS

Above cited table 1 show the demographic profile of the 665 nursing students reveals important characteristics that help contextualize their experiences with online teaching during the COVID-19 pandemic. A majority of the participants (60.9%) were between 17 and 20 years of age, indicating that most respondents were young learners in the early stages of their nursing education. Students were nearly evenly split between urban (52.8%) and rural (47.2%) backgrounds, suggesting a balanced representation of diverse living environments and potential differences in digital access. In terms of family monthly income, a considerable proportion of students (45.3%) belonged to higher income brackets, whereas a smaller group (18.0%) reported lower household income, highlighting the financial variability within the sample. Academically, most students (94.3%) were enrolled in the B.Sc. Nursing program, and over half (54.9%) were in their fourth year of study, reflecting a dominance of senior-level nursing students in the sample. Technology-related variables showed that online learning was predominantly accessed through mobile phones (93.5%), with mobile data serving as the primary source of internet connectivity for most participants (92.3%). This indicates heavy reliance on handheld devices and mobile networks for educational activities. Additionally, 66.1% of students had previously participated in online surveys, suggesting familiarity with digital tools and online response formats.

Table 2 show the analysis of issues experienced during online education shows that students encountered multiple challenges affecting their engagement and learning quality. A considerable proportion of students reported a poor learning environment at home, with nearly one-fifth strongly agreeing to this issue. Difficulties with self-discipline and concentration were also evident, with almost 30% expressing neutrality and others agreeing, indicating inconsistent ability to stay focused during online sessions. Social connectedness was significantly affected, as more than 31% strongly agreed that online learning reduced their interaction with peers. Technological limitations emerged as major barriers, with

internet connectivity problems receiving the highest strong agreement (39.8%), followed closely by technical issues related to login or system errors (36.1%). Interaction with facilitators was also suboptimal, as reflected by 27.2% who strongly agreed that communication was inadequate. Many students felt less active or perceived online learning as ineffective, with 37.7% remaining neutral suggesting uncertainty about the value of online teaching. Adaptation challenges were evident, with over one-third (34.6%) finding it difficult to remain in long online classes, and a similar proportion reporting reduced motivation to complete and submit academic tasks. Notably, eye-related problems such as irritation, glare, and digital eye strain were the most frequently reported issue, with 44.2% strongly agreeing, highlighting the significant physiological impact of prolonged screen exposure. Overall, the interpretation indicates that nursing students faced substantial environmental, technological, pedagogical, and health-related challenges during online learning, which collectively influenced the effectiveness and acceptability of digital teaching during the pandemic.

Table 1: Frequency and percentage distribution of demographic variables (n=665).

Demographic variable	Category	Frequency (f)	Percentage (%)
Age (years)	17-20	405	60.9
	21-24	228	34.3
	25 and above	32	4.8
Residence	Urban	351	52.8
	Rural	314	47.2
Family monthly income (INR)	Below 7878	120	18.0
	7878-11816	134	20.2
	11817-15754	110	16.5
	Above 15754	301	45.3
Course of study	B.Sc. Nursing	627	94.3
	M.Sc. Nursing programs	38	5.7
Year of study	1st year	102	15.3
	2nd year	98	14.7
	3rd year	100	15.0
	4th year	365	54.9
Gadget used for online class	Mobile Phone	622	93.5
	Laptop/Tablet	43	6.5
Source of internet	Mobile Data	614	92.3
	Wi-Fi/Broadband	51	7.7
Previous participation in online survey	Yes	433	66.1
	No	232	33.9

Table 2: Frequency and percentage distribution of issues in online education (n=665).

Criteria of issues in online education	Strongly disagree, N (%)	Disagree, N (%)	Neutral, N (%)	Agree, N (%)	Strongly agree, N (%)
Poor learning environment at home	134 (20.2)	104 (15.6)	172 (25.9)	120 (18.0)	135 (20.3)
Lack of self-discipline/concentration	125 (18.8)	111 (16.7)	198 (29.8)	128 (19.2)	103 (15.5)
Reduced socialization with other students	74 (11.1)	67 (10.1)	156 (23.5)	158 (23.8)	210 (31.6)
Internet problems in home (net connectivity)	63 (9.3)	71 (10.7)	142 (21.4)	124 (18.6)	265 (39.8)
Technical issues during classes (login, audio, video)	46 (6.9)	86 (12.9)	141 (21.4)	152 (22.9)	240 (36.1)
Poor interaction with facilitator	66 (9.9)	91 (13.7)	186 (28.0)	141 (21.2)	181 (27.2)
Perceived less active/not useful	76 (11.4)	99 (14.9)	251 (37.7)	127 (19.1)	112 (16.8)
Difficulty adapting to long online class	52 (7.8)	88 (13.2)	139 (20.9)	156 (23.5)	230 (34.6)
Less interest in creating/submitting assignments	91 (13.7)	110 (16.5)	163 (24.5)	138 (20.8)	163 (24.5)
Eye problems (irritation, glare, digital eye strain)	55 (8.3)	49 (7.4)	131 (19.7)	136 (20.5)	294 (44.2)

The Table 3 revealed that the analysis of trends in online education indicates that nursing students widely recognized the emerging positive developments associated with digital learning during the pandemic. Across most trend-related criteria, a substantial proportion of students selected Neutral, Agree, or Strongly Agree, reflecting broad acknowledgment of evolving online learning practices. A large segment of students reported neutrality or agreement regarding applied learning, high-speed learning, and a focus on improving skills, suggesting that online platforms facilitated learning efficiency and skill enhancement for many learners. The highest neutrality scores were observed for bite-size learning (48%) and flexible training formats (43.8%), indicating that students were receptive to shorter, modular content and varied instructional strategies introduced during online sessions. Strong positive trends were evident in technologically oriented areas: more than 31% agreed and over 27% strongly agreed that video-based content enhanced learning, while advanced digital technology usage received similarly high agreement rates. These highlights increasing acceptance of multimedia and digital tools as integral to modern nursing education. Blended learning and interactive materials also received substantial agreement, indicating student preference for hybrid instructional models that combine digital and face-to-face learning. Additionally, the category Prospects for the Future showed that more than half of the students agreed or strongly agreed that online education presents long-term opportunities for educational advancement.

Table 3: Frequency and percentage distribution of trends in online education (n=665).

Criteria of trends in online education	Strongly disagree, N (%)	Disagree, N (%)	Neutral, N (%)	Agree, N (%)	Strongly agree, N (%)
Applied learning	24 (3.6)	63 (9.5)	245 (36.8)	178 (26.8)	155 (23.3)
High-speed learning	50 (7.5)	96 (14.4)	235 (35.3)	168 (25.3)	116 (17.4)
Focus on improving skills	39 (5.9)	82 (12.3)	235 (35.3)	191 (28.7)	118 (17.7)
Bite-size learning	22 (3.3)	70 (10.5)	319 (48.0)	155 (23.3)	99 (14.9)
Flexible training formats	25 (3.8)	63 (9.5)	291 (43.8)	187 (28.1)	99 (14.9)
Video-based content	16 (2.4)	50 (7.5)	207 (31.1)	209 (31.4)	183 (27.5)
Increased use of advanced digital technology	18 (2.7)	41 (6.2)	192 (28.9)	209 (31.4)	205 (30.8)
Blended learning	20 (3.0)	65 (9.8)	287 (43.2)	172 (25.9)	121 (18.2)
Emphasis on interactive materials	9 (1.4)	54 (8.1)	277 (41.7)	209 (31.4)	116 (17.4)
Prospects for the future	22 (3.3)	42 (6.3)	259 (38.9)	201 (30.2)	141 (21.2)

Table 4: Overall level of issues and trends in online teaching (n=665).

Level of issues and trends	Issues in online teaching, N (%)	Trends in online teaching, N (%)
Strongly disagree (1-10)	8 (1.3)	0 (0)
Disagree (11-20)	59 (8.9)	14 (2.1)
Neutral (21-30)	163 (24.5)	145 (21.0)
Agree (31-40)	243 (36.5)	376 (56.5)
Strongly Agree (41-50)	192 (28.8)	130 (19.5)

The overall distribution shows that nursing students experienced notable issues in online teaching, with the majority falling into the Agree (36.5%) and Strongly Agree (28.8%) categories, indicating widespread challenges related to digital learning during the pandemic. Only a very small proportion (1.3%) strongly disagreed with the presence of issues. In contrast, the trends in online teaching reflect a more positive perception, with more than half of the students (56.5%) agreeing that online learning brought emerging technological and pedagogical advancements. A substantial number (19.5%) strongly agreed with the positive trends. Neutral responses were comparable for issues (24.5%) and trends (21%), suggesting that a segment of students was undecided or had mixed experiences. Overall, the interpretation highlights that while significant issues existed, students also recognized meaningful positive trends and improvements in online education (Table 4).

DISCUSSION

The present study explored the issues and emerging trends related to online teaching among nursing students during the COVID-19 pandemic, using a cross-sectional survey of 665 participants from selected nursing colleges in Chennai. The findings revealed a dual reality: while students faced substantial challenges in adapting to digital learning environments, they also recognized the benefits and long-term educational opportunities presented by online technologies. This discussion elaborates on these

findings, compares them with existing research, and highlights their implications for nursing education.

The demographic results showed that most participants were between 17-20 years of age, representing early adulthood, where adaptability to technology is generally high. This aligns with Alqahtani et al in 2021, who found that younger nursing students exhibited greater willingness to participate in e-learning during the pandemic.[2] The almost equal distribution between urban (52.8%) and rural (47.2%) students is important because rural students typically encounter more technological barriers an issue reaffirmed in the present study's findings on internet connectivity and device limitations. Additionally, a large proportion of students relied on mobile phones (93.5%) and mobile data (92.3%), a trend consistent with (Joshi et al in 2020), who reported that nursing and medical students in India predominantly used smartphones as their sole digital learning device during the pandemic.[17] This reliance on mobile devices has important implications: while smartphones provide accessibility, they also limit the depth of engagement due to small screen size, battery constraints, and reduced interactive capability.

A significant proportion of students identified poor learning environments at home (20.3% strongly agreeing), lack of self-discipline (29.8% neutral; 34.7% agreeing/strongly agreeing), and difficulty concentrating as major concerns. These results reflect findings by Adnan and Anwar in 2020, who reported that home environments often lack structure, leading to low academic focus among students during online classes.[1] Similarly, Khalil et al in 2020 found that medical students struggled to maintain concentration due to domestic distractions, noise, and shared living spaces.[9]

The high neutrality in some items such as perceived usefulness and engagement may indicate that many students were still adjusting to online learning, consistent with the transitional nature of the pandemic learning environment. Students' inability to maintain consistent self-discipline suggests a need for structured schedules, routine-building support, and innovative engagement strategies from faculty.

Reduced socialization with peers was one of the most significant issues, with 31.6% strongly agreeing. Nursing education traditionally involves collaborative learning and group discussions, which serve both academic and psychosocial purposes. Similar studies, such as those by Rose et al in 2020) and Singh et al in 2021, support this finding, noting that nursing students felt socially disconnected and emotionally isolated during prolonged online learning.[12,14] Such isolation not only affects motivation but can also influence professional socialization an essential component of nursing identity formation.

Internet connectivity emerged as the single most reported issue, with 39.8% strongly agreeing and 21.4% neutral.

Technical issues during login and class participation also received strong agreement (36.1%). This is consistent with earlier reports from Suryanarayanan & Kyriakides in 2020, who emphasized that digital platforms often fail to support uninterrupted learning for large student groups, especially in developing regions where bandwidth is unstable.[18]

Multiple Indian studies similarly reported that unstable internet connectivity was a major barrier to effective online learning across urban and rural settings.[11,8] The present study strengthens this evidence by showing that students heavily dependent on mobile data were disproportionately affected.

Over 27% strongly agreed that interaction with faculty was poor. Lack of real-time feedback, reduced opportunity for clarification, and limited personalized attention were recurring concerns. These finding echoes those of Abbasi et al in 2020, who found that students perceived online teaching as and insufficient for clarifying doubts.[3] Moreover, the lack of interactive teaching methods in many institutions may have further contributed to reduced engagement. Research by Singh & Thurman in 2019 suggests that active learning strategies such as breakout rooms, polls, and live quizzes can significantly improve engagement but are underutilized in many online settings.[14]

The most frequently reported issue was eye strain and digital glare, with 44.2% strongly agreeing. Excessive screen exposure, extended class durations, and minimal breaks contributed to digital fatigue. These findings align with research by Agarwal & Kaushik in 2020, who documented increased cases of digital eye strain among Indian students during pandemic-driven online learning.[16] Furthermore, prolonged online classes have been linked to musculoskeletal discomfort, headaches, and mental fatigue, indicating the need for ergonomic and schedule-related reforms in nursing online education.

Substantial agreement was observed in applied learning and improved learning speed, with 26.8% and 25.3% agreeing respectively. Students recognized that online platforms provided structured modules, recorded lectures, and self-paced learning formats, which facilitated enhanced understanding. Similar benefits are reported by Dhawan et al in 2020, who emphasized that online environments support self-directed learning and flexibility.[5] In studies conducted in Saudi Arabia by Alqahtani et al in 2021 and in China by Bao et al in 2020, nursing and medical students noted advantages such as easy access to learning materials and improved revision opportunities.[2,4]

High neutrality (48%) and agreement (23.3%) for bite-size learning reflect student preference for short, digestible content segments rather than long traditional lectures. Research on microlearning supports this trend, showing that short modules increase retention, reduce cognitive

load, and improve overall learning outcomes by Guo et al in 2014.[6]

This aligns with global digital education trends, where microlearning modules, podcasts, and 10-15-minute video lessons are becoming increasingly popular. Students demonstrated strong recognition of flexibility in online education, with 43.8% neutral and 28.1% agreeing. This indicates that although flexibility is appreciated, students may still be understanding or adjusting to it. Similar findings were reported by Singh et al in 2021, wherein nursing students valued the ability to balance academic tasks with personal responsibilities during lockdown.[14]

Video-based learning received some of the highest agreement scores, with 31.4% agreeing and 27.5% strongly agreeing. Such preferences align with Mayer's Cognitive Theory of Multimedia Learning, which states that combining visual and auditory channels improves memory and comprehension. Students also appreciated increased use of interactive materials, aligning with research by Sun et al in 2020, which highlighted that digital interactivity such as quizzes, simulations, and virtual labs significantly enhances learner engagement.[15]

The rising use of advanced digital technologies (VR tools, simulation apps, virtual demonstration platforms) was acknowledged by 62% of students. This supports the global shift towards digital transformation in nursing education, reflected in studies by Kononowicz et al in 2019, where virtual simulations improved clinical reasoning and procedural skills.[10] Blended learning also emerged as a major trend, with 43.2% neutral and 25.9% agreeing. This is noteworthy because blended learning has been recommended as the most sustainable post-pandemic model for nursing education. It is consistent with WHO and ICN recommendations that nursing curricula integrate digital literacy, simulation-based training, and flexible learning models.

The category "Prospects for the Future" received strong agreement from 21.2% and agreement from 30.2%, indicating optimism among students regarding the long-term relevance of digital learning technologies. This aligns with post-pandemic analyses by Hodges et al in 2020, who argue that emergency remote teaching has accelerated digital innovation and paved the way for robust hybrid learning models.[7]

Implications for nursing practice and education

The results of this study have significant implications for nursing education and practice. Online learning has become an essential component of contemporary nursing curricula, and effective adaptation requires institutions to prioritize digital literacy and competency among both faculty and students. Enhancing the quality of online instruction will directly influence clinical preparedness, as theoretical understanding forms the foundation for hands-on nursing practice. Furthermore, integrating virtual simulations, telehealth modules, and digital assessment tools can strengthen students' readiness for modern healthcare environments, which increasingly rely on electronic health records, remote monitoring, and digital communication. Nursing educators must adopt learner-centered, interactive teaching strategies that foster critical thinking, collaboration, and self-directed learning. From a practice perspective, the shift toward digital platforms reflects broader transformations in healthcare delivery, underscoring the need for nurses to be proficient with technology, adaptable to remote care environments, and capable of continuous learning through online modalities. Ultimately, these implications reinforce the importance of building a resilient, technologically equipped nursing workforce capable of meeting evolving healthcare challenges.

Limitations

This study has several limitations that should be acknowledged. First, data were collected using an online self-reported questionnaire, which may be subject to response bias, recall bias, and socially desirable answering. Second, the use of a non-probability purposive sampling technique limits the generalizability of the findings, as the sample may not fully represent all nursing students across different regions or institutions. Third, reliance on mobile-based responses may have influenced the accuracy of participation, particularly among students with unstable internet connectivity or limited digital literacy. Fourth, the cross-sectional design captures perceptions at a single point in time and does not reflect changes in experiences as the pandemic evolved. Fifth, the study did not assess psychological outcomes such as stress, anxiety, or motivation, which may have influenced students' perceptions of online education. Additionally, reliability values of the tool could not be statistically verified as the original document did not report coefficient measures, limiting psychometric evaluation. Despite these limitations, the study provides valuable insights into both the challenges and emerging trends of online teaching among nursing students during the COVID-19 pandemic.

CONCLUSION

The study provides a comprehensive analysis of the issues and emerging trends associated with online teaching among nursing students during the COVID-19 pandemic. The findings indicate that while students faced significant barriers such as poor learning environments, reduced concentration, inadequate interaction with faculty, and widespread internet and technical problems, they also recognized important positive developments. These include flexible learning opportunities, increased use of video-based and interactive content, modular learning structures, and advancements in digital technologies. The majority of students expressed agreement toward the positive trends, suggesting a growing acceptance of online and blended learning models in nursing education. The study highlights the need for institutions to adopt a

balanced and student-centered approach that addresses digital challenges while promoting innovative teaching practices. Strengthening digital infrastructure, enhancing faculty competency, and ensuring equitable access to technology will be essential for the sustainable integration of online learning in the future of nursing education.

Recommendations

Based on the findings of the study, several recommendations can be made to strengthen the effectiveness of online learning in nursing education. First, institutions should invest in robust digital infrastructure, including reliable learning management systems, high-bandwidth internet access, and technical support services to reduce disruptions during online classes. Second, training programs should be developed for faculty to enhance their digital pedagogical skills, including interactive teaching strategies, multimedia content development, and student engagement techniques. Third, structured guidelines on screen time, regular breaks, and ergonomic practices should be implemented to minimize digital eye strain and fatigue among students. Fourth, colleges should integrate blended learning models that combine online instruction with simulation-based clinical practice and hands-on laboratory sessions, ensuring competency-based learning. Fifth, student support services such as counseling, mentorship, and peer-assisted learning initiatives should be strengthened to address issues of isolation, stress, and reduced motivation in online settings. Finally, government and regulatory bodies should consider policies that improve digital equity by offering subsidized internet services or devices for students from disadvantaged backgrounds.

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