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Medical students' perception of online learning during the COVID-19 pandemic: a cross-sectional study in Nepalgunj Medical College

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ABSTRACT

Introduction: The COVID-19 pandemic compelled educational institutions worldwide to rapidly adopt online learning, causing significant disruption to traditional medical education. This study aimed to assess medical students' perceptions of online learning during the pandemic at Nepalgunj Medical College.

Methods: A cross-sectional descriptive study was conducted using a self-administered questionnaire among undergraduate students who attended online classes between March 2020 and September 2021. A total of 150 students participated.

Results: Most respondents (76%) were aged 18–24 years, and 85% reported having good IT skills. Flexibility emerged as the most significant advantage of online learning, reported by 92% followed by the ability to stay at home (80%) and easy access to study materials (73%). Conversely, the lack of interaction with educators and peers was identified as the major disadvantage by 82% of students, with 68% reporting technical difficulties. When comparing learning modalities, face-to-face teaching was perceived as significantly more effective in achieving learning objectives than online learning ($p < 0.001$). Students also reported higher engagement and activity levels in traditional classroom sessions compared to online classes. Despite these limitations, overall acceptance of online learning was high, with a mean Likert score of 3.8/5.

Conclusion: Online learning played a vital role in sustaining medical education during the COVID-19 pandemic. While it cannot fully replace face-to-face teaching, a blended learning approach combining online and traditional methods may enhance learning outcomes, engagement, and adaptability in medical education.

Keywords: COVID-19 pandemic, E-learning, Medical students, Nepal, Online learning, Perception

INTRODUCTION

The COVID-19 pandemic led to the closure of educational institutions worldwide, prompting an unprecedented transition to online learning to maintain continuity of education. [1,2] This sudden shift posed significant challenges, particularly in medical education, which traditionally relies on hands-on experience, practical skills training, and direct interaction between students, faculty, and patients. [3] Conventional medical teaching emphasizes bedside learning, laboratory practice, and interactive classroom discussions, all of which were severely affected by social distancing measures and lockdowns. As a result, both educators and students had to adapt rapidly to digital platforms, often without prior preparation or formal training in e-learning methodologies. E-learning provides several advantages, including flexibility, accessibility, and safety.[4,5] Students can attend classes remotely, learn at their own pace, revisit recorded lectures, and access study materials from anywhere, which is particularly useful during emergencies. However, online learning also presents significant challenges. Reduced interaction with instructors and peers can decrease motivation and engagement, while technical issues such as unstable internet connections, lack of suitable devices, and poor home learning environments may further hinder effective learning.[4,5] Moreover, mastering practical clinical skills through online platforms remains difficult, as virtual simulations cannot fully replicate hands-on patient care experiences.

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In Nepal, medical colleges, including Nepalgunj Medical College, had to quickly implement online learning platforms to ensure the continuity of medical education during the pandemic. While this transition allowed educational activities to continue, the effectiveness of online learning and its impact on student engagement and learning outcomes remain unclear. Understanding students' perceptions is therefore crucial to identifying the benefits and limitations of online education and to guiding improvements in teaching strategies. Insights from such studies can help institutions design blended learning approaches that integrate the flexibility of online methods with the interactive and practical components of traditional classroom teaching.

This study aimed to assess medical students' perceptions, benefits, challenges, and acceptance of online learning during the COVID-19 pandemic at Nepalgunj Medical College. By evaluating students' experiences, the study seeks to inform future curriculum development, optimize e-learning strategies, and enhance medical education in contexts where traditional teaching may be disrupted. The primary objective of this study was to assess medical students' perceptions of online learning during the COVID-19 pandemic at Nepalgunj Medical College. The specific objectives were to evaluate students' overall acceptance and satisfaction with e-learning, identify the advantages and disadvantages of online learning as perceived by medical students, compare the effectiveness of online learning versus face-to-face learning in achieving learning objectives, assess the impact of e-learning on students' engagement and activity levels during classes and explore the relationship between students' IT skills and their perception/acceptance of online learning.

METHODS

This was a cross-sectional descriptive study conducted among medical students enrolled in online classes at Nepalgunj Medical College during the COVID-19 pandemic. All undergraduate medical students who participated in online classes between March 2020 and September 2021 were invited after ethical clearance was obtained. A total of 150 students responded. A self-administered questionnaire was used to collect data on: Demographics (age, gender, year of study), IT skills, advantages and

disadvantages of online learning, comparison of online and face-to-face learning, and acceptance and satisfaction levels (using a 5-point Likert scale)

Data were analyzed using SPSS v25. Descriptive statistics summarized demographics, advantages, and disadvantages. Inferential statistical analysis was performed to compare perceptions between online and face-to-face learning. A paired t-test was used to compare mean activity scores between the two learning modes. The association between IT skills and acceptance of online learning was analyzed using an independent samples t-test. Chi-square tests were applied to examine associations between categorical variables, including learning mode and perceived effectiveness. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 150 medical students participated in the study. Most students (76%) were aged between 18–24 years, and the majority (85%) reported having good IT skills, which likely facilitated their engagement with online learning platforms. (Table 1)

Table 1: Participant Characteristics(n=150)

Characteristic	Frequency	Percentage
Age 18–24 yrs	114	76%
Age >24 yrs	36	24%
Good IT skills	128	85%
Moderate IT skills	22	15%

Students identified several benefits of online learning, with flexibility emerging as the most commonly reported advantage. The ability to stay at home and access learning materials remotely was also highly appreciated. (Table 2)

Table 2: Perceived Advantages of online learning Online Learning during the COVID-19 Pandemic(n=150)

Advantage	Frequency	Percentage
Flexibility	138	92%
Ability to stay at home	120	80%
Access to online materials	110	73%

Despite the benefits, students reported notable challenges associated with e-learning. The lack of interaction with educators and peers was the most prominent concern, followed by technical difficulties and poor home learning conditions.(Table 3)

Table 3: Perceived Disadvantages of online learning Online Learning during the COVID-19 Pandemic(n=150)

Disadvantage	Frequency	Percentage
Lack of interaction with educators/ peers	123	82%
Technical problems	102	68%

When comparing online and face-to-face learning, students reported that traditional classes were more effective for mastering learning objectives ($p < 0.001$). They also indicated higher engagement and activity levels during in-person sessions, highlighting the importance of direct interaction in medical education.(Table 4)

Table 4: Student Activity Levels: Face-to-Face vs Online Learning

Learning Mode	Mean Activity Score (Likert 1–5)	SD
Face-to-Face Classes	4.3	0.6
Online Classes	3.2	0.7

Overall, students demonstrated a high level of acceptance of online learning, with an average Likert scale score of 3.8/5. Students valued flexibility and comfort while studying from home and expressed interest in integrating online methods into future blended learning approaches.(Table 5)

Table 5: Acceptance Scores of online learning Online Learning during the COVID-19 Pandemic

Statement	Mean Score
Flexibility of learning	4.2
Satisfaction with online materials	3.7
Comfort studying from home	3.9

DISCUSSION

This study demonstrates that medical students in Nepalgunj Medical College generally perceive e-learning positively. Flexibility emerged as the most significant benefit, allowing students to access materials remotely and manage their time effectively. [6,7] However, reduced interaction with peers and educators remains a critical limitation, affecting motivation and engagement.[8] Consistent with other studies, students reported higher effectiveness and engagement in face-to-face learning. [9,10] This emphasizes the need for blended approaches that integrate online flexibility with hands-on, interactive methods. While technical barriers, such as unstable internet and poor home environments, were reported, students showed resilience and adaptability in navigating these challenges.[11,12] Institutional support, including IT training and provision of resources, can further enhance the effectiveness of e-learning.[13,14]

This cross-sectional study was conducted in a single institution, which may limit generalizability. Data were self-reported and may be subject to response bias. The study did not assess objective academic or clinical performance outcomes.

CONCLUSION

E-learning has become an essential component of medical education during emergencies like the COVID-19 pandemic. While students acknowledge its advantages, face-to-face learning continues to be more effective for achieving educational outcomes. A blended learning approach combining online and traditional methods may optimize student engagement and learning.

DECLARATION

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Author Contributions

DBD contributed to the concept and design of the research, literature search, data collection, data analysis, and data interpretation. DBD also drafted and critically reviewed the manuscript for important intellectual content, approved the final version for submission, agreed to be accountable for all aspects of the work, and served as corresponding author.

Ethical Approval

The study was approved by the institutional ethical committee of Nepalgunj Medical College Teaching Hospital on September 1st 2020(REf no: 102/077-078.

Consent/Assent

Informed written consent was obtained from the all the participants before data collection

Data Availability Statement

Data will be provided to the editorial team on request by the corresponding author.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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