

Original Research Article

Exploring nursing students' attitudes towards online teaching and learning: challenges and recommendations

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ABSTRACT

Background: With the increasing integration of technology in education, understanding students' attitudes toward online teaching and learning is crucial for effective educational strategies. The primary objectives were to assess nursing students' attitudes toward online teaching and learning and to explore perceived challenges encountered during online education.

Methods: A descriptive cross-sectional survey was conducted among 120 nursing students who experienced online education between March 2020 and February 2022. Data were collected using a self-structured attitude scale and analyzed using descriptive and inferential statistics.

Results: The majority of nursing students exhibited positive attitudes towards online teaching and learning, with second-year students displaying the highest mean scores across attitude sub-scales. Challenges identified included internet issues, lack of interaction, and physical problems. Recommendations for improvement included enhancing technological infrastructure, promoting interactive learning experiences, and providing additional support services.

Conclusions: Nursing students generally hold positive attitudes towards online teaching and learning, despite facing challenges such as internet connectivity issues and lack of interaction. By addressing these challenges and implementing recommendations for improvement, educational institutions can optimize online education delivery, fostering a positive and conducive learning environment for nursing students in the digital age.

Keywords: Distance, Education, Internet, Nursing, Optimism, Simulation training, Students, Technology

INTRODUCTION

We are currently witnessing an era of profound transformation across various fields, including education, driven by rapid advancements in science and technology. The integration of technology in educational settings has not only bridged gaps but also strengthened the relationships between students and teachers.¹ By enabling the creation of updated educational materials and

curricula, technology has significantly accelerated the teaching and learning process. Moreover, it has made education more interactive, collaborative, and meaningful, fostering greater student engagement with course materials.² This technological evolution represents a paradigm shift, redefining the landscape of human life and learning.

In response to the COVID-19 pandemic, universities and higher education institutions (HEIs) swiftly transitioned to virtual classes, online assignment submissions, and digital teacher-student interactions.³ This shift also affected professional course providers, such as teacher education institutions, where both theoretical and practical components are crucial. The abrupt move from traditional learning methods to technology-integrated approaches left little time for students and teachers to properly plan lessons, assessments, technical arrangements, or support systems. In this context, it is essential to study students' attitudes towards online teaching and learning.⁴

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, led to the closure of educational institutions worldwide starting in March 2020.⁵ This abrupt shutdown halted academic activities indefinitely, compelling educators to swiftly transition to online learning to prevent academic disruption. While online education is not a new concept, its rapid adoption during the pandemic introduced several challenges. The most significant issue was the attitudinal shift required from both teachers and students as they adapted to this new educational paradigm.⁶ Attitudes play a crucial role in shaping behavior, and with the Indian government advocating for increased online and blended learning in the future, understanding these attitudes becomes even more critical.⁷

With these considerations in mind, the researcher set out to investigate the attitudes of nursing students towards online instruction. The findings from this study are intended to enhance the instructional program and improve the online learning experience. Additionally, the study aims to identify initiatives necessary for fostering positive attitudinal changes among learners. Thus, the objectives are to assess nursing students' attitudes toward online teaching and learning and to explore the perceived challenges encountered during online education.

METHODS

Study design, settings, and participants

A descriptive cross-sectional survey was conducted among 120 nursing students who experienced online education between March 2020 and February 2022. Participants were randomly selected using an incidental random sampling technique. The survey was conducted over a single day, on August 31, 2022. The inclusion criteria included nursing students who had online education exposure of more than 6 months and were willing to participate in the study.

Tools for data collection

A self-structured attitude scale toward online teaching and learning was developed for this study, utilizing a five-point Likert scale ranging from 1 (strongly disagree)

to 5 (strongly agree). This tool comprised six dimensions with a total of 59 items divided into the following subscales: accessibility and flexibility, satisfaction, usefulness, intention and experiences, parent and teacher support, and effectiveness. The scale was meticulously developed by the researchers and validated through expert opinion to ensure content validity. To comprehensively assess nursing students' attitudes toward online teaching and learning, the scale included both positive and negative statements, with 38 positive and 21 negative items, and reverse scoring applied where necessary. The tool demonstrated high reliability, with a split-half reliability coefficient of 0.93. Additionally, a two-item open-ended questionnaire was employed to gather data from 20 students in each year of the nursing program.

Procedure for data collection

The investigator personally distributed the questionnaire to all the students in the sample at their respective colleges. The students were informed that the questionnaire aimed to assess attitudes towards online teaching and learning. They were assured that their responses would be used solely for research purposes, kept confidential, and not misused. The investigator instructed the students to mark their responses in the appropriate block for each item.

Ethical considerations

The study was conducted following ethical approval from the Institutional Ethics Committee dated 20.08.2022. Written informed consent was obtained from each participant after providing a detailed explanation of the study's objectives. Participation was entirely voluntary, with assurances of confidentiality and anonymity regarding all acquired information.

Sample size

The sample size was determined using the formula, $n = \frac{Z^2 P (1-P)}{d^2}$. At a 95% confidence interval, with the proportion of favorable attitudes towards e-learning estimated at 58.9% and a 10% error margin, the calculated sample size was 95.⁸ To account for a potential 20% non-response rate, the final adjusted sample size was increased to 120.

Statistical analysis

The data were analyzed using both descriptive and inferential statistics with IBM SPSS Statistics for Windows, version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics included frequencies and percentages for nominal data, as well as means, standard deviations, and ranges for quantitative data. To assess differences between groups, the independent sample t-test and ANOVA were employed. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 120 nursing students participated in the study. Table 1 displays the performance of nursing students on the attitude scale regarding online teaching and learning. The mean score on the attitude scale was 182.61 with a

standard deviation of 23.56 (range 114-277), indicating a generally positive attitude. Under the assumption of a normal distribution, approximately two-thirds of the students scored between 159 and 216, further suggesting a predominantly positive attitude toward online teaching and learning.

Table 1: Attitude toward online teaching and learning among nursing students (n=120).

Variable	Maximum score	Minimum score	Middle range	Mean	SD
Attitude towards online teaching and learning	277	114	164	182.61	23.56

Table 2 illustrates a year-wise analysis of nursing students' attitudes towards online teaching and learning. Notably, across all academic years, second-year students consistently demonstrated the highest mean scores across all sub-scales of attitude. Specifically, they displayed the highest mean scores for accessibility and flexibility

(30.47±5.84), satisfaction (49.05±8.89), usefulness (40.22±6.45), intention (34.32±7.33), parents and teachers support (18.67±3.55), and effectiveness (15.50±4.75). This trend indicates that second-year students generally hold more positive attitudes toward online teaching and learning compared to their peers in other academic years.

Table 2: Year-wise comparison of attitudes toward online teaching and learning among nursing students.

Sub-scales	II year		III year		IV year	
	Mean	SD	Mean	SD	Mean	SD
Accessibility and flexibility	30.47	5.84	28.65	4.63	28.37	4.13
Satisfaction	49.05	8.89	46.15	6.90	46.73	6.49
Usefulness	40.22	6.45	39.37	6.00	37.87	4.94
Intention	34.32	7.33	34.12	5.65	33.25	6.03
Parents and teachers support	18.67	3.55	18.15	2.84	17.85	3.04
Effectiveness	15.50	4.75	13.83	3.99	15.23	3.58

The F-value was found to be 9.05 at a 0.05 level of significance which was greater than the critical value (3.68), suggesting that there are significant differences between the groups. The between-group variance

(differences among group means) is significantly larger than the within-group variance (differences within the same group). This indicates that the three groups differed in their attitude toward online teaching and learning (Table 3).

Table 3: Analysis of variance (ANOVA) for year-wise comparison of attitudes towards online teaching and learning among nursing students.

	Sum of squares	Degree of freedom	Mean square	F-value
Between (SSB)	6325.32	2	3162.66	9.05*
Within (SSW)	6325.32	15	349.57	
Total (SST)	11568.81	17		

*p<0.05.

Table 4 presents a gender-wise comparison of attitudes on various subscales related to online teaching and learning. The results of the t-tests indicate that there were no significant differences between male and female students across all six aspects of the attitude scale. This suggests that male and female students hold similar attitudes towards online teaching and learning, as the differences observed were not statistically significant.

The difficulty faced by students during online teaching and learning is summarized in Table 5. The primary

challenges identified include internet issues (76.66%), followed by a lack of interaction (58.33%). Physical problems such as eye strain, headaches, and tiredness were noted by 38.33% of students.

Table 6 shows suggestions provided by students regarding online teaching and learning. The most prevalent suggestion was the reduction of class frequency and duration (35%), incorporation of extra audiovisual aids, such as videos, to enhance learning experiences (33.33%), provision of extra classes exclusively for

addressing doubts (25%), and implementation of regular class tests (25%).

Table 4: Gender-wise comparison of attitudes toward online teaching and learning among nursing students.

Sub-scales	Male		Female		t-value
	Mean	SD	Mean	SD	
Accessibility and flexibility	30.02	5.17	28.26	4.53	0.05
Satisfaction	49.31	7.82	45.17	6.47	0.00
Usefulness	40.55	5.92	37.67	5.37	0.00
Intention and experience	35.44	6.48	32.26	5.70	0.00
Parents and teachers support	18.76	3.14	17.66	3.04	0.05
Effectiveness	16.03	4.38	13.59	3.45	0.00

Table 5: Problems faced by nursing students during online teaching and learning.

Category	Frequency (%)
Internet issue	46 (76.66)
Lack of interaction	35 (58.33)
Physical problems (eye pain, headache, tiredness)	23 (38.33)
Lack of practical	17 (28.33)
Uninteresting	15 (25)
Calm and quiet environment	14 (23.33)

Table 6: Suggestions from nursing students for improvement of online teaching and learning.

Category	Frequency (%)
Reduction of class frequency and duration	21 (35)
Use extra audio video aids	20 (33.33)
Provide study material	19 (31.66)
Extra classes only for doubt	15 (25)
Class test	15 (25)

DISCUSSION

The present study was conducted to examine the attitude of nursing students regarding online teaching and learning. Major findings of our study suggested that nursing students had generally positive attitudes toward online teaching and learning. Second-year students consistently exhibited the highest mean scores across attitude sub-scales, indicating a particularly favorable outlook on online education compared to other academic years. Challenges faced by students included internet issues and a lack of interaction, while suggestions for improvement included reducing class frequency, incorporating additional audiovisual aids, and providing extra classes for addressing doubts or regular class tests.

Online teaching and learning refer to the process of delivering educational content and facilitating learning interactions through internet-based platforms and digital technologies. Our study revealed that the majority of nursing students had a positive attitude towards online

teaching and learning, aligning with the findings of previous studies.^{8,9} In contrast, a study demonstrated that the majority of nursing students had poor online learning self-efficacy.¹⁰ A previous study suggested that nursing students were satisfied with their distance learning experience, particularly regarding the accessibility of study materials, adaptation of lectures, and quality of communication with academic staff.¹¹ Furthermore, a recent meta-analysis demonstrated a correlation between negative student attitudes toward online learning and diminished academic performance, emphasizing the significance of addressing student perceptions and attitudes within the realm of online education.¹²

Another intriguing finding of our study suggests that second-year nursing students had higher levels of satisfaction, finding online learning more accessible and flexible compared to their senior counterparts. However, as students progress through their studies, perceptions of usefulness tend to diminish. Interestingly, despite this decline, there is a consistent intention among students of all years to engage with online learning. Moreover, support from parents and teachers remains constant across academic years. Lastly, while second-year students rate online learning as more effective, there is a slight improvement in perceived effectiveness among fourth-year students, suggesting a nuanced evolution in perception as students advance in their studies.

Our findings suggest that demographic variables such as gender do not significantly affect the attitude of nursing students toward online teaching and learning. This may be attributed to the equal learning opportunities provided to both male and female students. In contemporary society, females are more aware and active in their education than in the past, and parents are increasingly supporting their daughters by providing them with the same facilities and resources as boys. In contrast to our study, previous research has indicated that educational levels, gender, and personality traits can impact online learning outcomes.¹³

The majority of participants in our study identified internet issues as the most common difficulty faced during online teaching and learning, followed by a lack of interaction and physical problems. This finding aligns

with a previous study that also highlighted internet and technological challenges in e-learning.⁸ Another research study argued that online learning might not achieve the desired outcomes due to insufficient interaction with instructors, lack of campus socialization, inadequate technology skills, and unsuitable content for online courses and group work.¹⁴ Additionally, a study identified four distinct patterns of challenges in online education: inadequacy for practical learning, inadequacy of internet and website services, barriers related to educational content and interaction between teacher and student, and lack of motivation.¹⁵

The present study possesses several strengths that enhance its validity and relevance. Conducted during a period of rapid technological integration in education, this research captures the evolving dynamics between students and online learning environments. By surveying a well-defined sample of nursing students, the study provides insights into attitudes toward online teaching, crucial during the COVID-19 pandemic which necessitated an abrupt transition to virtual learning. The study's methodology, including a robust sample size calculation and the use of a validated attitude scale, ensures reliable and generalizable findings. Furthermore, the inclusion of a detailed analysis of demographic variables, such as gender, and their impact on attitudes towards online learning adds depth to the research. The comprehensive identification of challenges and suggestions for improvement from the students' perspective offers valuable feedback for enhancing online education.

This study has few limitations. While our research contributes valuable insights into nursing students' attitudes toward online teaching and learning, it is essential to acknowledge certain limitations that may impact the interpretation and generalization of our findings. Firstly, the study's reliance on self-reported data may introduce response biases, such as social desirability bias, potentially influencing participants' responses to the attitude scale. Additionally, the cross-sectional design limits our ability to establish causality or temporal relationships between variables, as attitudes may evolve over time. Moreover, the study's focus on a specific nursing student demographic may restrict the generalizability of findings to other student populations or educational contexts. Furthermore, the study's geographical scope, conducted within a specific institution, may limit the broader applicability of results to diverse educational settings. The exclusion of qualitative data or in-depth interviews may also restrict our understanding of the nuanced experiences and perceptions of students regarding online learning.

CONCLUSION

In conclusion, our study sheds light on nursing students' attitudes toward online teaching and learning, highlighting both strengths and areas for improvement.

Despite challenges such as internet issues and lack of interaction, the majority of students exhibited positive attitudes towards online education. Second-year students, in particular, demonstrated higher levels of satisfaction, suggesting the potential benefits of early exposure to online learning. While demographic variables like gender did not significantly affect attitudes, addressing challenges such as technological infrastructure and promoting interactive learning experiences are essential for optimizing online education. By implementing the aforementioned recommendations, educational institutions can enhance the quality and effectiveness of online teaching and learning, ultimately fostering a conducive learning environment for nursing students in the digital age.

Recommendations

Based on our study's findings, several recommendations can be proposed to enhance online teaching and learning practices for nursing students. Firstly, educational institutions should prioritize investments in robust technological infrastructure to ensure reliable internet connectivity and seamless access to online resources. Additionally, educators should actively promote interactive learning experiences by incorporating tools such as virtual discussions, group activities, and collaborative projects to foster student engagement and participation. Providing comprehensive technical support services and resources can assist students in navigating technological challenges effectively. Furthermore, flexibility in scheduling and assignment deadlines can accommodate diverse learning needs and preferences, promoting a positive and inclusive online learning environment. Finally, the integration of multimedia and audio-visual aids into course materials can enhance comprehension and retention, catering to different learning styles among students. By implementing these recommendations, institutions can optimize the quality and effectiveness of online education for nursing students, ultimately facilitating their academic success and professional development in the digital era.

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