Beyond traditional lectures: development, analysis, and acceptability of E-learning module in psychiatry

Ajay Thangaraj[1], Kamatchinathan Premkumar[2], Vaishali Shanmugam[3], Sheelapriya G[4]

[1]Associate Professor, Department of Psychiatry, Indira Medical College and Hospital, Thiruvallur, Tamil Nadu, India, [2]Associate Professor, Department of Psychiatry, Annaii Medical College and Hospital, Rajalakshmi Health City, Chennai, Tamil Nadu, India, [3]Assistant Professor, Department of Psychiatry, Madha Medical College and Research Institute, Chennai, Tamil Nadu, India, [4]Life Transition Counselor and Coach, GT Clinic, Thiruvallur, Tamil Nadu, India

ABSTRACT

Background: Although digital technologies are increasingly being incorporated into medical education, there is still a lack of substantial evidence comparing the effectiveness of E-learning video modules with traditional lectures in psychiatry education remains limited. This is chiefly significant in the areas such as the Doctor-Patient Relationship and Breaking Bad News. **Aims and Objectives:** This study aims to develop, implement, and evaluate an E-learning video module designed to enhance psychiatry competency within the Attitude, Ethics, and Communication (AETCOM) framework, with a particular emphasis on the Doctor-Patient Relationship and the process of Breaking Bad News. **Materials and Methods:** Forty medical students were randomly assigned to one of two learning methods: Traditional lecture-based instruction (Group A, n = 20) or an E-learning video module (Group B, n = 20). The training focused on Psychiatry competency and the AETCOM module on the Doctor-Patient Relationship, with a special emphasis on Breaking Bad News. Knowledge acquisition was measured using standardized pre-tests and post-tests administered two weeks after the intervention. In addition, student perceptions were assessed through a semi-structured feedback questionnaire. **Results:** Both groups demonstrated equivalent baseline knowledge (pre-test scores: 55%). Post-test results revealed significantly higher scores in the E-learning group (93%) compared to the lecture group (77%), representing a mean difference of 16% (P < 0.0001, Cohen's d = 1.82). Correlation analysis showed strong positive relationships between perceived engagement and post-test performance (r = 0.73, P < 0.001). Most students (80%) reported feeling "much more prepared" after completing the E-learning module and valued its self-paced nature (80%). The flexibility for repeated viewing and high engagement levels were identified as key advantages of the E-learning approach. **Conclusion:** E-learning video modules demonstrate superior effectiveness compared to traditional lectures in psychiatry education particularly in areas such as the Doctor-Patient Relationship and Breaking Bad News, with significantly higher knowledge acquisition and positive student perceptions.

Key words: Medical education; E-learning; Video-based learning; Psychiatry; Educational technology, Medical students

INTRODUCTION

The landscape of medical education has undergone significant transformation in recent decades, with a gradual shift from traditional didactic approaches toward innovative, technology-enhanced learning methodologies.[1] E-learning, defined as the use of electronic technologies to access educational content outside of a traditional

classroom, has emerged as a prominent educational strategy with particular relevance to medical education.[2] Within the spectrum of E-learning tools, video-based learning has garnered substantial attention for its capacity to engage multiple sensory modalities simultaneously, potentially enhancing knowledge acquisition and retention.[3]

The integration of E-learning approaches in medical education has been accelerated by several factors, including advancements in digital technology, increasing demands on faculty time, curriculum saturation, and the need for standardized educational experiences across diverse clinical settings.[4] In psychiatry education specifically, where the understanding of complex behavioral presentations and subtle diagnostic nuances is paramount, traditional didactic methods may present limitations in conveying the dynamic nature of clinical encounters.[5] Video-based learning offers potential advantages in this context by enabling the visualization of psychiatric symptoms, therapeutic interactions, and clinical reasoning processes in a controlled and reproducible format.

Previous studies have demonstrated the efficacy of E-learning interventions across various medical disciplines. A systematic review by Cook et al., found that E-learning was associated with positive outcomes in knowledge acquisition, skills development, and learner satisfaction compared to no intervention.[6] However, the comparative effectiveness of E-learning versus traditional teaching methodologies has yielded inconsistent results, with some studies reporting superior outcomes with E-learning approaches and others finding equivalent effectiveness.[7]

Despite the growing implementation of E-learning in medical curricula, there remains a paucity of evidence regarding its application and effectiveness specifically within psychiatry education. The unique characteristics of psychiatric education – including the emphasis on observation, communication skills, and clinical reasoning – warrant dedicated investigation into how E-learning modalities may enhance or complement traditional teaching approaches in this field.[8]

The present study aims to address this gap by developing and implementing an E-learning video module in undergraduate psychiatry education and systematically evaluating its effectiveness compared to traditional lecture-based instruction. In addition, this study explores students' perceptions of the E-learning experience, providing valuable insights into the acceptability and perceived utility of this educational approach among medical students. The findings will contribute to the evolving understanding of optimal pedagogical strategies in psychiatry education and inform evidence-based curricular design in medical education.

Aims and objectives

This study aims to develop, implement, and evaluate an E-learning video module designed to enhance psychiatry competency within the Attitude, Ethics, and Communication (AETCOM) framework, with a particular emphasis on the Doctor-Patient Relationship and the process of Breaking Bad News.

- To design and develop an interactive E-learning video module on Breaking Bad News, integrating multimedia components such as narrated presentations, clinical role-play scenarios, and animated illustrations
- To compare the effectiveness of this digital learning approach with traditional lecture-based teaching through pre-tests and post-tests
- To analyze students' engagement, perceived relevance to clinical practice, and overall satisfaction with the E-learning module using a validated feedback questionnaire.

MATERIALS AND METHODS

This study employed a randomized comparative design to evaluate the effectiveness of an E-learning video module compared to traditional lecture-based teaching in psychiatry education. The study was conducted at the Department of Psychiatry, Indira Medical College and Hospitals, Thiruvallur, Tamil Nadu, between March and May 2024. Before implementation, ethical approval has been obtained from the Institutional Ethical Committee with Ref: (IEC approval number: IMCH/IEC/2024/003).

Inclusion criteria
Participants and study design
Medical students in their clinical years (MBBS Phase II) who were undergoing their psychiatry rotational postings were invited to participate in the study. The inclusion criteria encompassed:
- Regular attendance in psychiatry rotations
- No prior exposure to specialized teaching in the selected psychiatric topic
- Willingness to participate in both pre-assessment and post-assessment activities.

Exclusion criteria
Exclusion criteria included students with incomplete attendance or prior participation in similar educational interventions.

A prior sample size calculation performed using G*Power software (version 3.1), with an effect size of 0.8, alpha error of 0.05, and power of 0.80, yielding a minimum

required sample of 36 participants. To Account for potential attrition, 40 students were recruited using a stratified random sampling technique to ensure a balanced representation across academic years.

Following informed consent, participants were randomly allocated to two groups with a 1:1 allocation ratio. Group A (n=20) was assigned to receive traditional lecture-based instruction, while Group B (n=20) was designated to learn through the E-learning video module. Allocation concealment was ensured using sequentially numbered, opaque, sealed envelopes opened only after participant enrolment.

Educational interventions

The educational content focused on psychiatry competency and the AETCOM module on the Doctor-Patient Relationship, with a special emphasis on Breaking Bad News, aligned with the undergraduate medical curriculum. Efforts were made to ensure content equivalence across both modalities, covering identical learning objectives, communication frameworks, psychological impact, and ethical considerations.

The E-learning video module was developed using professional video production software, integrating multimedia elements such as narrated presentations, role-play scenarios, animated depictions of patient responses, and interactive components. Designed by the Department of Psychiatry at Indira Medical College and Hospitals, the module was validated by three senior external psychiatrists to enhance clarity, engagement, and technical accessibility.

Group A received a 60-min traditional didactic lecture delivered by an experienced psychiatry faculty member, following standard teaching practices including PowerPoint presentations and opportunities for questions. Group B was provided access to the E-learning video module (also 60 min in duration) through a secure online learning management system.

Outcome measures

A standardized assessment tool was developed to evaluate participants' knowledge acquisition, comprising 25 multiple-choice questions covering key concepts from the AETCOM module, communication skills, and Breaking Bad News.

All participants completed the pre-test immediately before their assigned educational intervention to establish baseline knowledge levels. The post-test, featuring the same assessment tool with randomized question order, was administered two weeks after the educational intervention to evaluate knowledge retention rather than immediate recall.

Students' perceptions of the E-learning module were evaluated through a structured feedback questionnaire, validated through a pilot study with a separate cohort of five medical students and senior faculty members. The questionnaire, administered to Group B after the post-test, employed a 5-point Likert scale to evaluate engagement, perceived clinical relevance, preparedness for delivering bad news, and satisfaction with self-paced learning. Open-ended questions captured qualitative insights on module strengths, limitations, and areas for improvement.

Data were analyzed using SPSS software (version 29.02). Descriptive statistics were calculated for demographic characteristics and test scores, with results presented as means and standard deviations or frequencies and percentages as appropriate. Paired t-tests were employed to compare pre-test and post-test scores within each group, while independent t-tests were utilized to analyze differences between groups.

RESULTS

A total of 40 medical students were enrolled in the study and randomly allocated into two equal groups (n=20 per group): Group A receiving traditional lecture-based instruction and Group B learning through the E-learning video module. All participants completed the study protocol with no dropouts reported.

Both groups demonstrated equivalent baseline knowledge, with identical mean pre-test scores of 55%. Following the educational interventions, post-test assessment revealed significant improvements in both groups, though with notable differences in knowledge acquisition (Table 1).

To further analyze the effectiveness of each teaching methodology, paired t-tests were conducted to evaluate the pre-test to post-test improvement within each group. Both groups showed statistically significant improvements from baseline ($P<0.001$ for both groups), confirming the effectiveness of both instructional methods (Figure 1).

Table 1: Comparison of mean pre-test and post-test scores between groups

Group	Pre-test Mean score (%)	Post-test Mean score (%)	Mean Improvement (%)
Group A (Lecture)	55	77	22
Group B (E-learning Module)	55	93	38

However, the magnitude of improvement was substantially greater in Group B (E-learning module) compared to Group A (lecture).

Analysis of post-test scores between groups demonstrated superior knowledge acquisition in the E-learning video module group compared to the traditional lecture group. Group B achieved a mean post-test score of 93%, while Group A attained a mean score of 77%, representing a statistically significant difference of 16 percentage points (P<0.0001) as determined by independent t-test analysis (Table 2).

Students' perceptions regarding various aspects of the E-learning module were assessed using a structured feedback questionnaire. The responses indicated overwhelmingly positive attitudes toward the E-learning modality (Table 3).

Chi-square analysis of the perception data revealed statistically significant positive attitudes toward the E-learning module across all measured parameters (P<0.01). A majority of students (80%) reported feeling "much more prepared" in breaking bad news after engaging with the E-learning module (Figure 2). Similarly, 80% of participants affirmed that the module facilitated learning at their own pace and allowed for repeated viewing of content when needed. The module's engagement level was rated as "very engaging" by 50% of students and "engaging" by an additional 30% (Figure 3). Regarding relevancy to future clinical applications, 70% of respondents considered the module "very relevant."

Correlation analysis was performed to examine relationships between various perception parameters and post-test performance in the E-learning group (Table 4).

A significant positive correlation was observed between perceived engagement and post-test performance (r=0.73, P<0.001), suggesting that higher levels of engagement with the E-learning module were associated with better performance outcomes. Similarly, students' sense of preparedness after completing the module showed a strong correlation with their post-test scores (r=0.71, P<0.001). Moderate positive correlations were observed between post-test performance and perceived relevance (r=0.68, P<0.001), self-paced learning satisfaction (r=0.64, P=0.002), and repeated viewing utilization (r=0.59, P=0.006).

The qualitative feedback indicated that students particularly valued the flexibility, accessibility, and self-paced nature of the E-learning module. They reported that the ability to replay complex sections and review material at their convenience enhanced their understanding and retention of psychiatric concepts. Furthermore, the visual and auditory components

Table 2: Statistical comparison of post-test scores between groups

Groups	Post-test mean score (%)	Mean difference	Significance (P-value)
Group A (Lecture)	77	16	<0.0001
Group B (E-learning Module)	93		

Table 3: Student perception of E-learning module (n=20)

Parameter	Response category	Frequency (%)
Engagingness	Very engaging	10 (50)
	Engaging	6 (30)
	Neutral	4 (20)
Relevancy for future applications	Very relevant	14 (70)
	Relevant	6 (30)
Preparedness after watching video	Much more prepared	16 (80)
	Prepared	4 (20)
Learning at repeated and own pace	Yes	16 (80%)
	No	4 (20)
Learning at own pace	Yes	16 (80)
	No	4 (20)

Table 4: Correlation between student perception parameters and post-test performance in E-learning group

Perception parameter	Correlation coefficient (r)	P-value	Strength of correlation
Engagement level	0.73	<0.001	Strong positive
Perceived relevance	0.68	<0.001	Moderate positive
Preparedness after module	0.71	<0.001	Strong positive
Self-paced learning satisfaction	0.64	0.002	Moderate positive
Repeated viewing utilization	0.59	0.006	Moderate positive

of the E-learning module were highlighted as effective tools for improving comprehension of clinical presentations and diagnostic criteria that might be challenging to grasp through traditional lecture formats alone.

Overall, the results demonstrated that the E-learning video module was not only more effective in improving knowledge scores but was also positively perceived by medical students as an engaging, relevant, and flexible learning tool for psychiatry education.

DISCUSSION

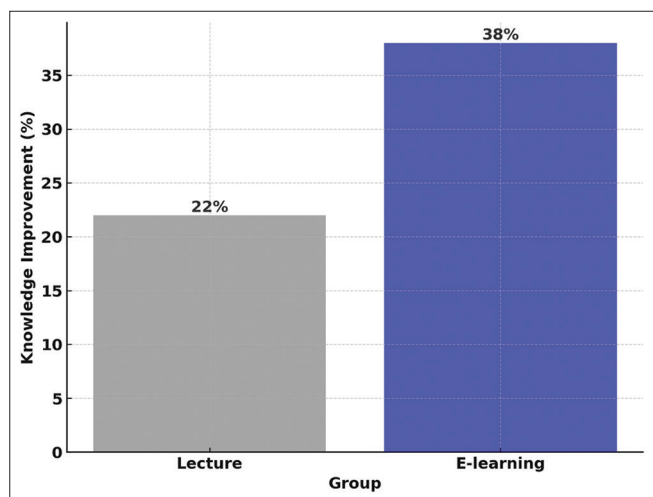This study evaluated the comparative effectiveness of an E-learning video module versus traditional lecture-

Figure 1: Percentage of knowledge improvement after educational intervention in both groups
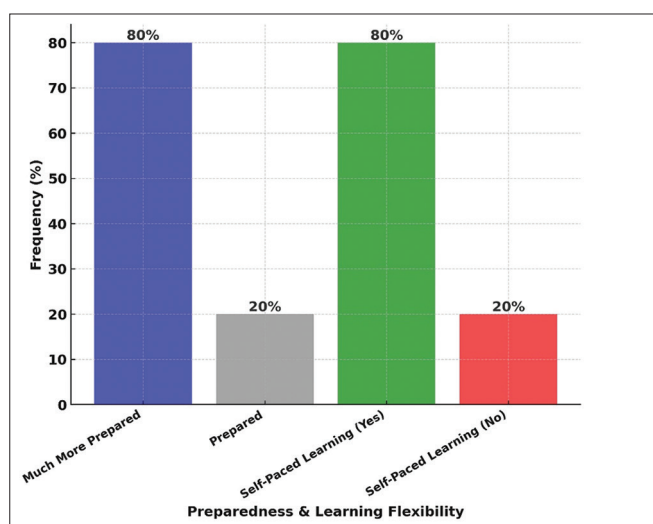

Figure 2: Student-reported preparedness and learning flexibility after using E-learning module

Figure 3: Student perception of E-learning module engagement and relevance (n=20)

based instruction in educating medical students on the doctor-patient relationship and the communication of bad news. Findings revealed a significant enhancement in knowledge acquisition among students utilizing the E-learning approach. In addition, participants reported higher engagement, perceived relevance, greater learning flexibility, and increased confidence in delivering bad news, highlighting the potential of digital learning in augmenting psychiatry education.

Our findings reveal a substantial improvement in post-test performance among students who engaged with the E-learning module compared to those who received traditional lecture-based instruction. The E-learning group achieved a mean post-test score of 93%, significantly outperforming the lecture group (77%) by a margin of
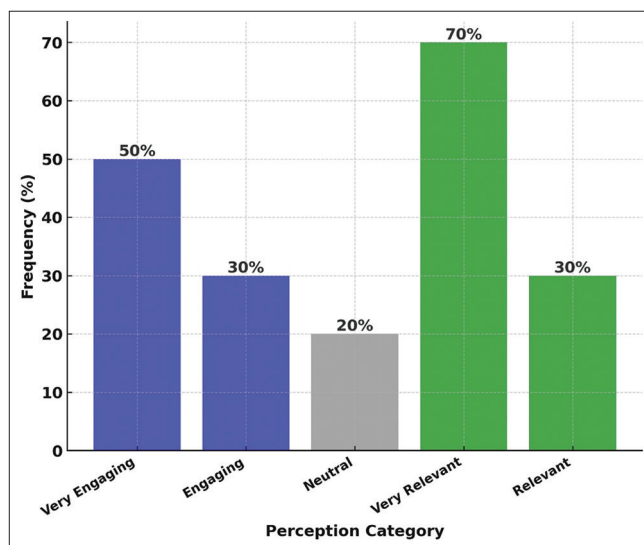
16% ($P<0.0001$). This improvement exceeds the effect sizes reported in several comparable studies. For instance, a meta-analysis by Cook et al., found a positive yet more modest effect of internet-based learning over no intervention (standardized mean difference=1.00, 95% CI: 0.90–1.10).[6] Similarly, Brockfeld et al., reported only a slight advantage of video-based courses over live lectures (74.3% vs. 70.6%), a smaller gain than observed in our study.[7]

The large effect size in our study (Cohen's d=1.82) underscores the substantial impact of the E-learning intervention, surpassing the effect sizes reported in prior meta-analyses on flipped classroom approaches in health professions education, where Hew and Lo identified an overall effect size of 0.33 (95% CI: 0.21–0.46) in favor of flipped learning over traditional methods.[9] The greater effectiveness of our E-learning module could be attributed to its structured design, which incorporated visual demonstrations of psychiatric consultations, interactive role-plays, and multimedia elements that reinforced key concepts.

Interestingly, while both groups started with identical baseline knowledge (pre-test scores: 55%), the magnitude of improvement differed significantly (38% vs. 22% increase). This pattern aligns with findings from Taveira-Gomes et al., who demonstrated that E-learning platforms incorporating spaced repetition and retrieval practice yielded significantly greater knowledge gains than conventional methods.[10] The observed advantage suggests that digital learning when designed with cognitive learning principles in mind, can enhance knowledge acquisition more effectively than passive lecture formats.

Our perception data further support the effectiveness of E-learning, with 80% of students reporting feeling "much

more prepared" after completing the module. This aligns with findings from Maheshwari et al., where 79.5% of medical students expressed greater confidence in their knowledge after using video-based learning resources.[11] However, our results contrast with those of Dost et al., who reported mixed student perceptions of online learning during the COVID-19 pandemic, with only 46% expressing positive attitudes toward digital formats.[12] This discrepancy may reflect differences in content design, as our study utilized structured, interactive E-learning elements, whereas emergency online learning during the pandemic often lacked such refinement.

A particularly notable finding is that 80% of students valued the self-paced nature of the E-learning module. The ability to review complex material multiple times appears especially beneficial in psychiatry education, where diagnostic subtleties and nuanced communication skills require repeated exposure for mastery. This finding aligns with Dong and Goh's 12 key principles for effective video use in medical education, which emphasize learner-controlled pacing as a critical component of digital learning effectiveness.[3]

The strong correlation between perceived engagement and post-test performance ($r=0.73$, $P<0.001$) highlights the pivotal role of engagement in knowledge acquisition. This aligns with Kauffman and Kao's findings, which identified engagement as a major predictor of learning success in digital education environments.[13] The particularly high correlation observed in our study may be attributed to the interactive clinical vignettes and immersive role-playing exercises embedded in the E-learning module, which likely enhanced student involvement and knowledge retention.

Beyond knowledge acquisition, our findings hold broader implications for psychiatry education. The visual and interactive nature of the E-learning video module may offer unique advantages in demonstrating attitude, communication skills, psychiatric symptoms, therapeutic interactions, and mental status examinations – areas that are often challenging to convey effectively through traditional lectures. This aligns with Piot et al.'s findings, which suggest that simulation-based learning is particularly effective in psychiatry education, with an overall effect size of 1.13 (95% CI: 0.67–1.59) for knowledge outcomes.[5]

A key strength of this study is its randomized design, ensuring a fair comparison between the two teaching modalities. In addition, content equivalence between E-learning and lecture-based instruction was carefully maintained to isolate the effect of delivery format. The two-week post-test interval further strengthens the study by assessing short-term knowledge retention rather than immediate recall, reducing the risk of transient learning effects.

This study provides compelling evidence for the superior effectiveness of E-learning video modules over traditional lecture-based teaching in psychiatry education, particularly in enhancing knowledge acquisition and student engagement. The strong positive correlations between engagement, perceived relevance, and learning outcomes suggest that well-structured E-learning interventions can significantly enrich medical education.

Given these findings, future curriculum development should integrate E-learning modules alongside traditional instruction, leveraging a blended learning approach that maximizes the strengths of both modalities. Further studies should investigate the long-term retention of knowledge, its impact on clinical performance, and scalability across diverse medical education settings.

Our study underscores the potential of digital learning technologies to transform medical education, particularly in fields like psychiatry, where nuanced communication skills and patient interactions are central to clinical competency.

Limitations of the study
There are certain limitations that should be acknowledged. The relatively small sample size, while sufficient based on power calculations, was drawn from a single institution, potentially limiting generalizability. Moreover, we assessed only short-term knowledge retention, and future research should explore long-term learning outcomes and clinical skill application. While we measured students' perceived preparedness for breaking bad news, objective assessment of clinical performance remains an important area for further investigation.

CONCLUSION

This study highlights the superior effectiveness of E-learning video modules over traditional lectures in enhancing knowledge acquisition in psychiatry education, particularly in critical areas such as the Doctor-Patient Relationship and Breaking Bad News. Medical students expressed high satisfaction with the E-learning approach, emphasizing its engaging nature, relevance to clinical practice, enhanced preparedness for delivering bad news, and the flexibility of self-paced learning. These findings provide compelling evidence for integrating E-learning modules into psychiatry curricula, potentially within a blended learning framework that optimally combines the strengths of both instructional methods. Given the evolving landscape of medical education, incorporating

E-learning can improve not only theoretical understanding but also the practical readiness of future Doctors. Future research should investigate the long-term retention of knowledge and the impact of E-learning on the development of practical clinical skills in psychiatric education.

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